The PHOTOFACT Servicer

OCTOBER 18th, 1946 ★ *Published for all users of Howard W. Sams' PhotoFact Folders* ★ VOL. 1, No. 7

ROBERT M. ELLIS, *Editor*

LAST CALL!!

Don't take a chance on missing the direct mailings to members of the Howard W. Sams Institute. Get your name in at once!

Your editor has just had a preview of the splendid new material being prepared for the exclusive use of Institute Members—material by experts who are outstanding successes in their various fields. Business making aids, sales promotional material, advertising helps, other valuable data will be sent by *direct mailings* to members only.

This material cannot be bought at any price, but will be sent to you without charge if you are a member of the Howard W. Sams Institute. Send in your membership application card today!

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CABINET REFINISHING AND REPAIRING

In our researches on methods to make radio servicing more profitable we find the lucrative field of cabinet repair and refinishing is untouched by the average service shop. We also find that this condition is largely the result of the dearth of published information on the subject.

Accordingly we have commissioned an outstanding authority on modern woodworking and finishing to prepare a folder for us on the subject. This folder too, is for the exclusive use of Institute Members. Do not miss these benefits. Register today!

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NEW RECORD CHANGER FOLDER

In this PHOTOFACT Folder Set you are receiving the first of a series of compilations on Automatic Record Changers. The special Folder enclosed covers the Maguire ARC-1.

This new folder gives you the mechanical adjustments required for servicing—clearly, concisely, understandably—in a way that will save you time and effort. Like the PHOTOFACT Folders on receivers these new record changer folders are prepared directly from physical samples of the manufacturer's product—the data is not a "rehash" of manufacturers' service notes. Here is another step in our announced program of making the radio service profession more profitable, more pleasant, and more dignified.

We will have one Record Changer Folder in each succeeding PHOTOFACT Folder Set until we cover all standard and popular makes. At the present time we have records of fourteen such models.

The Utah Model 550 is scheduled for PHOTOFACT Folder Set No. 8. Please write us and tell us in what order we shall schedule other types. We will do our best to provide this service as you want it.

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BIG LABORATORIES USE PHOTO FACT FOLDERS

An organization that is probably the largest radio development laboratory in the world regularly sends us their order for six issues of the latest PHOTOFACT Folder Sets; we fill this order through a conveniently located distributor. Another concern, a major manufacturer of radio and electronic products mails copies of PHOTOFACT Folder Sets to their various laboratories all over the world. We do not know of a single radio receiver or parts manufacturer who does not receive at least one set of PHOTOFACT Folders per issue. Name the company and we can show you the evidence!

So you see that radio service engineers are not the only users of PHOTOFACT Folders. They are invaluable to everyone who must keep up to date on radio receiver design practice.

UNKNOWN I.F. FREQUENCIES

Several patrons have asked how to find the I.F. frequency of a receiver when no service data is available, and when the I.F. transformers are unmarked. Unless the customer has tampered with the trimmers so as to throw the frequency widely off, the following method can usually be depended on to give good results.

Connect your signal generator to the grid of the first detector, set your signal generator for moderate output, and start sweeping the spectrum from the lowest frequency available (say 100 kc), and, slowly increase to 550 kc. the top of the broadcast band. You may get several responses—the highest frequency response is the one that indicates the I.F. peak, and the other responses are sub-multiples of it.

Suppose you get a response at 116 kc., 232 kc., and 464 kc., then the correct intermediate frequency is the customary 465 kc. But don't stop until you sweep the entire spectrum between 100 kc. and the top of the broadcast band. Suppose you get responses at 116 kc. and 232 kc. as previously mentioned; but none at 465 kc.—what probably would be the intermediate frequency? Not 232 kc. because this frequency has had little commercial usage.

The intermediate frequency is undoubtedly 262½ kc., and the difference, 262½—232 or 30½ kc. is due to misalignment.

When making these tests touch the stator of the oscillator section of the gang condenser to stop the oscillator momentarily. Any response dropping out when the oscillator ceases functioning is due to heterodyning action and should be disregarded.

It is a matter of interest that an intermediate frequency that is a multiple of 10 is seldom used—i.e. 450 kc. The reason for this is that the use of an odd value such as 465 kc. 262½ kc., etc., prevents a "zero beat" heterodyne between a harmonic of the intermediate frequency amplifier and an incoming signal.

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AN IMPROVED ALIGNMENT PROCEDURE

The "rocking" method of adjusting the low frequency pad of a superheterodyne has been quite generally accepted by the industry, and is satisfactory for superheterodynes having average selectivity in the front end.

There exists, however, a much more precise method of setting the low frequency pad, and this method is recommended whenever it is desired to obtain the maximum sensitivity from any receiver. The method is particularly valuable for aligning some of the older superheterodynes having four gang condensers. These sets have sufficient "front end" selectivity so that any misalignment results in lowered sensitivity or in high hiss level. The alignment procedure to be described is not original with us, but was specified by the old Silver-Marshall, Inc., now defunct for many years. This Company placed a sensitivity tolerance in inspection on each receiver; and it is interesting to note that receivers which would not meet passing standards when adjusted by ordinary alignment procedure would pass perfectly when their approved method was followed.

The method to be described involves temporarily turning the receiver into a two control superheterodyne by tuning the oscillator with a separate one gang variable condenser. Some shops mount a 365 to 500 mmf. variable condenser on their test panel for this purpose. The condenser should be provided with flexible leads and "snapper" or clip terminals.

Before adjusting the low frequency pad the intermediate frequency amplifier must be aligned in the usual manner, and then the trimmers on the gang condenser must be set for maximum response at 1400 kc., in accordance with conventional procedure.

Then proceed as follows:

1. Unsolder the lead connecting to the stator of the oscillator section of the gang condenser.
2. Connect the rotor and frame lead of the external variable condenser to the frame of the receiver's gang condenser. (This connec-

tion can usually be made by clipping the "cold" external variable condenser lead to the receiver chassis.)

3. Clip the "hot" external condenser lead (the stator lead) on to the wire previously removed from the stator of the oscillator section of the gang condenser. This produces a two control superheterodyne, the antenna stage (and r.f. stage if used) being tuned by the knob on the set, and the oscillator being tuned by the external variable condenser.
4. Connect the signal generator to the antenna and ground binding posts, using the customary dummy antenna. Tune the output of the signal generator to 600 kc.
5. Turn on the receiver and tune in the signal by adjusting the external variable condenser.
6. Turn the tuning knob on the receiver and determine the point of maximum response of the antenna and r.f. sections. Set the dial of the receiver at this position and then *let it alone.*

   Since you have independently tuned the r.f. end of the receiver and the oscillator sections of the receiver to the signal frequency, it is apparent that each system will be tuned for maximum efficiency. Then if this adjustment of the external condenser is transferred to the gang condenser, the identical efficiency will be obtained on single control operation.
7. Turn off set, but *touch no adjustments.* Unclip the external condenser lead from the receiver stator wire, and resolder this wire to the gang condenser.

   Turn on the set. Unless the low frequency pad happens to be in approximately correct adjustment you will not hear the 600 kc. signal from the generator.
8. Tune in the signal by adjusting the low frequency pad, *only.* Do not touch any of the controls of the receiver or on the signal generator. By adjusting the low frequency pad only you should be able to tune in the signal for exactly the same response in your output meter as you had on the two control adjustment. You now have perfect adjustment of the low frequency pad.

There is some interaction between the high frequency trimmers and the low frequency pad so that if a large readjustment of the pad is required, it may be necessary to retune the receiver to 1400 kc., adjust the trimmers on the gang condenser and repeat the alignment procedure the second time.

Actually the procedure is not nearly as complicated as it sounds from reading the description; and with most receivers the alignment can be accomplished practically as fast as conventional alignment; and this substitution method does give positive results.

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OSCILLATOR COIL MATCHING

In a perfectly aligned superheterodyne having matched coils, the oscillator will track exactly with the r.f. at three points—1400 kc. and 600 kc. (the two alignment points), and at an intermediate point halfway between, at 1000 kc. At other points an error in tracking is normal, and the value of this error need not exceed 3 kc. There are an infinite number of oscillator coil inductances and pad capacitances which will give two point tracking, but only one value of inductance and one value of capacitance which will give three point tracking.

The alignment procedure described in the preceding section also provides an accurate method of ascertaining whether or not the oscillator coil matches the antenna and r.f. coils. The procedure is to align carefully at 1400 kc. and 600 kc., and then to check the alignment at the cross-over point of 1000 kc. We will assume at this point that the hypothetical receiver we are checking has been aligned at these two frequencies.

Reconvert to two control operation, and tune in with both controls a signal at 1000 kc. from your signal generator. Note the reading on the dial of the receiver.* Disconnect the external variable condenser and reconnect the wire to the stator of the gang condenser. This time, turn the turning knob of the receiver until the 1000 kc. signal is again tuned in.

If the signal comes in with the same dial setting for either single or dual control operation the oscillator coil is correctly matched to the antenna and r.f. coils. If you have to tune toward a lower frequency to bring in the 1000 kc. signal, the oscillator coil lacks inductance. If you have to tune to a higher frequency to bring in the 1000 kc. signal, the oscillator coil has too much inductance.

Information on the method of adjusting inductance on universal adjustable replacement coils should be obtained from the instruction sheets accompanying these products. The following remarks apply to standard coils in which the inductance can be altered only by adding or removing turns.

When adjustment of inductance is made by adding or removing turns from an oscillator coil, the turns should be removed one at a time, and the front end of the set must be completely realigned after change, and performance checked at 1000 kc. for deviation.

Adjusting oscillator coil inductance is unavoidably a very time-consuming job, but knowledge of the procedure will enable you to rescue a set from the "lemon" class because of low sensitivity, and can pay big dividends.

*If the dial on the receiver is a correct match for the gang condenser and coils, and if the dial is set correctly on the shaft, the dial should read 1000 kc. at this point. These are very big "ifs." For proper performance the receiver must be properly aligned; and if proper alignment seems to be resulting in incorrect dial calibration, it is probably best to ignore this until alignment is completed, and then to slip the dial on the shaft to get best calibration.

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MATHEMATICS

In discussing alignment and coil matching we have refrained from considering the mathematical and theoretical aspects of the subject because this is unnecessary for practical service work.

For readers who do want this theory and mathematics, we recommend chapter 15 of the "Radiotron Designer's Handbook" by F. Langford Smith, an Australian publication. This inexpensive book distributed in the United States by R.C.A., is in a class by itself for the simple concise analysis it presents of radio receiver circuits and the electrical requirements of the associated components. If you want the theory behind receiver and amplifier design, this book is a "must" for you.

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JUST TO REMIND YOU . . .

Of important things we told you in previous issues of the PHOTOFACT Servicer:

"How Much Is Your Labor Worth?" Parts 1 and 2 by Don Shaw, are available on request to Institute Members. If you didn't get your copies, just drop us a postal card.

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If you didn't get Set No. 1 and a copy of "How to Use It" tell us—we will gladly send you a copy Free. It tells you how to use and how to file PHOTOFACT Folders and how to become a member and keep your membership active in the Howard W. Sams Institute. (You can always send your check to us for back numbers. We will see that they are shipped promptly.)

• • •

There's no charge for exchanging imperfectly printed folders. If you have one send it back and we will gladly exchange it.

• • •

Be sure to write and tell us of your field experiences. You'll be given full credit for them and you'll be helping others.

• • •

Don't forget, please—Tell us what receivers you want analyzed first—what replacement parts manufacturers you want us to list and how we can be of more help to you.

• • •

We hope that during the coming months, many of you will find it possible to visit us and see for yourself what we are doing. The latchstring is always out so come whenever you can. Our new telephone numbers are MArket 6383 and MArket 6384.

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A registration card, packed with each set of Folders, identifies the number of that set. Cards are furnished with each set of folders for two purposes—to enable you to register if you have not already done so, and after that, to accompany letters requesting service information, to enable us to speed the information to you without having to check our membership records. Be sure you are registered so that you will receive valuable free mailings.

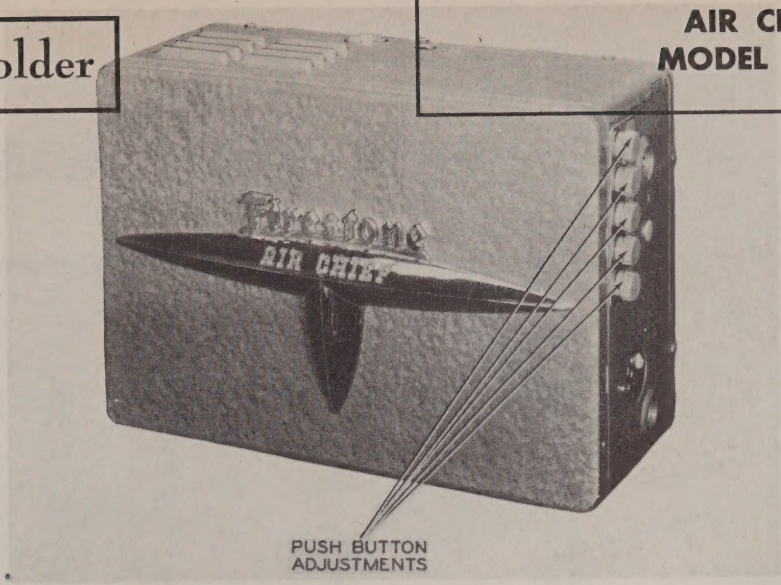
PUBLICATION DATES

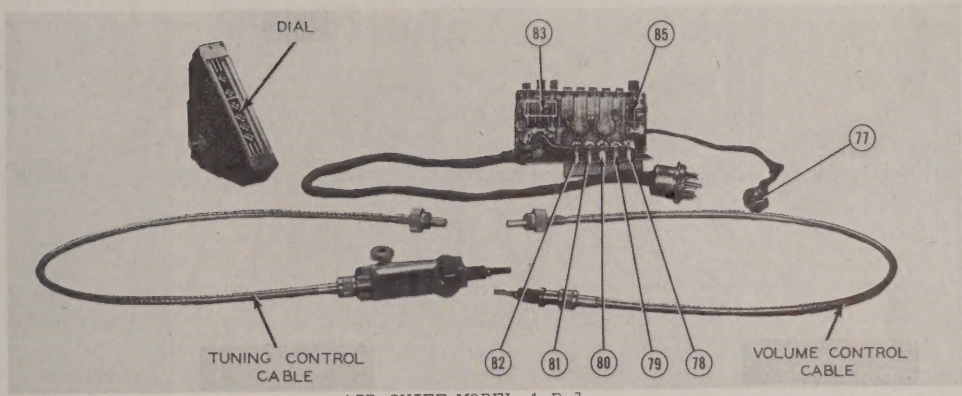
When will other sets of PHOTOFACT Folders be published?

Set No. 8	**November 29**
Set No. 9	**December 19**
Set No. 10	**December 29**
Set No. 11	**January 19**

Use the order blank accompanying this set of Folders—address the envelope and send it to your radio parts supply house—they will do the rest.

If you have been unable to get any issues of PHOTOFACT Folder Sets, send your order and money directly to us and we will see that you are supplied.





AIR CHIEF MODEL 4-B-1

TRADE NAME	Air Chief Model 4-B-1
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Battery Operated Superheterodyne Auto.Receiver with Automatic Tuning
TUBES (EIGHT)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6J5GT Phase Inverter, 2-6K6GT Power Output, 0Z4 Rectifier.
POWER SUPPLY	6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC RATING 7 Amps. @ 6.3V DC

ALIGNMENT INSTRUCTIONS

Set for dial tuning. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to ant. term. Low side to chassis.	455KC	540KC (Tuning mechanism fully counter-clockwise)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
.1 MFD.	"	"	"	"	A5	Adjust for minimum output.
100 MMF.	"	1600KC	Tuning mechanism fully clockwise.	"	A6,A7, A8.	Adjust for maximum output in given order.
100 MMF.	"	600KC	Tune for maximum output.	"	A9	Rock dial and adjust for maximum output. Recheck A6, A7, A8 at 1600KC.
100 MMF.	"	1500KC	Set to button #5	"	B5	Adjust for maximum output.
100 MMF.	"	2410KC	"	"	A10	Adjust for minimum output. B5 may now be retuned to desired station.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inverter	6J5GT	6J5GT	6Q	
6	Power Output	6K6GT	6K6GT	7AC	
7	Power Output	6K6GT	6K6GT	7AC	
8	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	20	350	25099	FP330	DY-2x15-350/20-25	EL-212	AF32K4A	UP4CJ5	■ Filter
B	10	350						BR1235	▲ "
C	20	25							Cath. Bypass
10	.007	1600	25109	OW345	S-16-007	TR-27	1684-0075	MD16D7	Buffer
11	.5	100	25118	TP431	S-4-5	TC-5	484-.5	DT4S5	Hash Filter
12	.5	100	25118	TP431	S-4-5	TC-5	484-.5	DT4S5	" "
13	.1	400	25103	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
14	.006	1200	25110	TP460	S-16-007	TC-26	1684-006	MD16D6	6K6 Plate Bypass
15	.05	400	25105	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
16	.05	400	25105	TP426	S-4-05	TC-15	484-05	DT4S5	" "
17	.005	400	25116	TP408	S-6-005	TC-25	484-005	DT6D5	" "
18	.005	400	25116	TP408	S-6-005	TC-25	484-005	DT6D5	Tone Compensation
19	.05	200	25102	TP426	S-4-05	TC-15	484-05	DT4S5	Feedback
20	.25	200	25114	TP430	S-4-25	TC-2	484-.25	DT4P25	Audio Cath. Bypass
21	.005	400	25116	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
22	.05	200	25111	TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
23	.05	200	25111	TP426	S-4-05	TC-15	484-05	DT4S5	IF Cath. Bypass
24	.05	200	25111	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
25	.05	200	25111	TP426	S-4-05	TC-15	484-05	DT4S5	RF Cath. Bypass
26	.01	200	25112	TP421	S-4-01	TC-11	484-01	DT4S1	Ant. Coupling
27	.1	400	25103	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.*
28	250	500	25187	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Hash Filter
29	250	500	25187	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" "
30	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	6SQ7 Plate Bypass
31	270	500	25190	MCB240	MOS.5-325	MS-32	1469-00025	5R5T25	Fixed Trimmer
32	100	500	25106	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
33	20	500	25121	MCB220	MOS.5-42	MS-42	1469-00002	5R5Q2	Fixed Trimmer
34	250	500	25187	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fixed Padder
35	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Ant. Coupling
36	150		25117						Fixed Trimmer Cer.
37	500	500	25189	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling

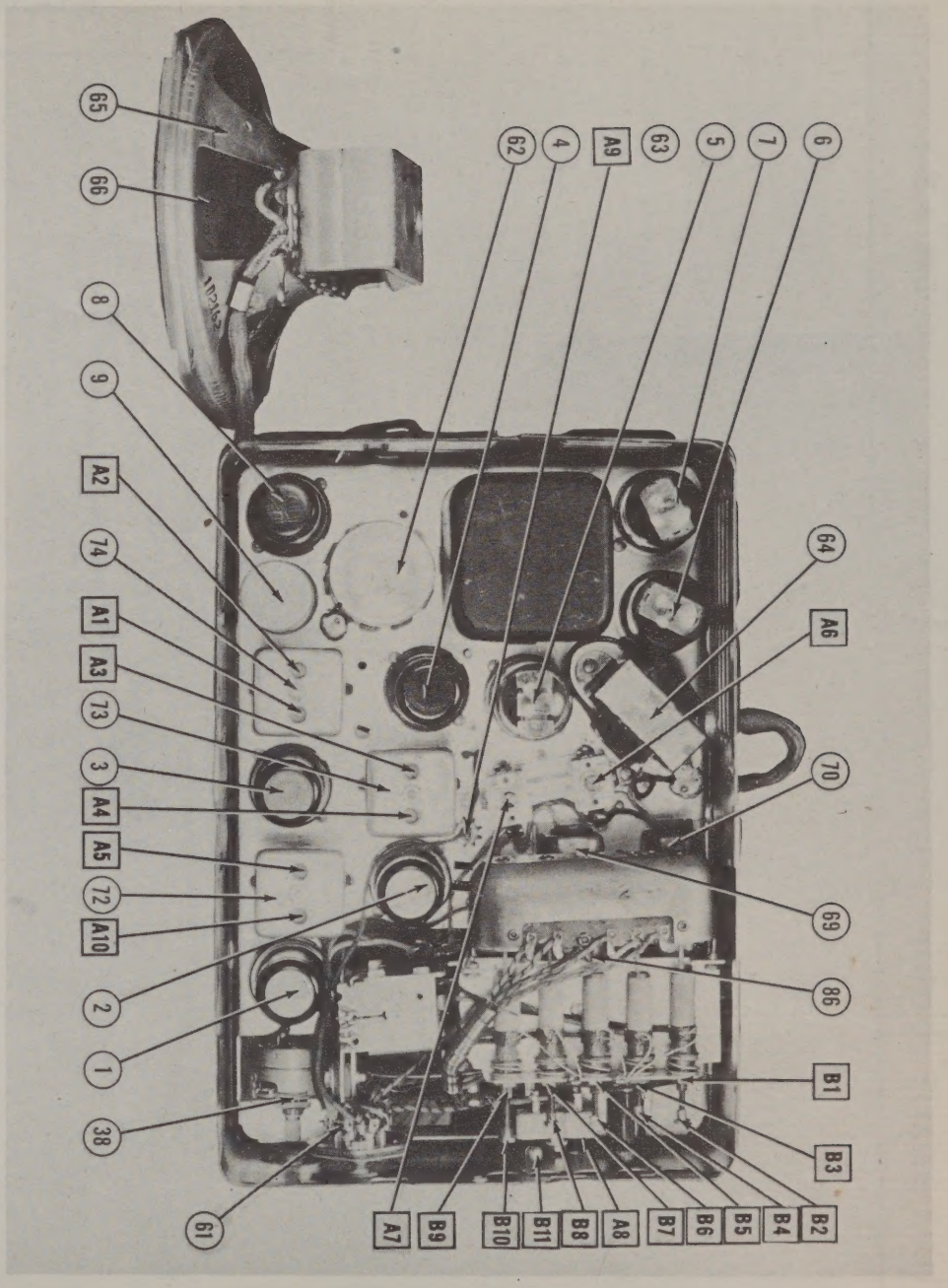
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
38	500KΩ	1	78042				Volume Control
39	800Ω	1	78031				Sensitivity Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
40	100KΩ	½	77167	BTS-100K	Br.-Blk.-Yl. Ant. Loading
41	1 Meg.	½	77181	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
42	470KΩ	½	77173	BTS-470K	Yl.-Vi.-Yl. Converter Grid
43	1 Meg.	½	77181	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
44	10KΩ	½	77180	BTS-10K	Br.-Blk.-Or. RF Plate Load
45	22KΩ	½	77169	BTS-22K	Red-Red-Or. Osc. Grid
46	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. IF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR CHIEF PART No.	IRC PART No.	
47	22KΩ	1	77169	BTA-22K	Red-Red-Or. IF Screen Dropping
48	330Ω	½	77179	BW-½-330	Or.-Or.-Br. 1st AF Cathode
49	10 Meg.	½	77182	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
50	220KΩ	½	77178	BTS-220K	Red-Red-Yl. 1st AF Plate Load
51	10 Meg.	½	77182	BTS-10 Meg.	Br.-Blk.-Blue Driver Grid
52	220KΩ	½	77178	BTS-220K	Red-Red-Yl. Driver Cathode
53	220KΩ	½	77178	BTS-220K	Red-Red-Yl. Driver Plate Load
54	470KΩ	½	77173	BTS-470K	Yl.-Vi.-Yl. Output Grid
55	470KΩ	½	77173	BTS-470K	Yl.-Vi.-Yl. Output Grid
56	470Ω	1	77125	BTA-470	Yl.-Vi.-Br. Output Cathodes
57	2200Ω	½	77194	BTS-2200	Red-Red-Red Feedback
58	1000Ω	1	77123	BTA-1000	Br.-Blk.-Red Filter
59	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. Hash Suppression
60	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. Hash Suppression
61	33KΩ	½	77183	BTS-33K	Or.-Or.-Or. Tone Compensation

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				AIR CHIEF PART No.	MALLORY PART No.	RADIART PART No.	
62	Interrupter	6.3V	115~	76001	859	5301	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	
63	5.7VDC @ 3.0A	530VCT @ .047A			94078	P-4060†	T-22R20†	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
64	12000Ω	3.3Ω	420Ω CT	.65Ω	94111	A-3856	T-22S48‡		‡Drill one new mounting hole.

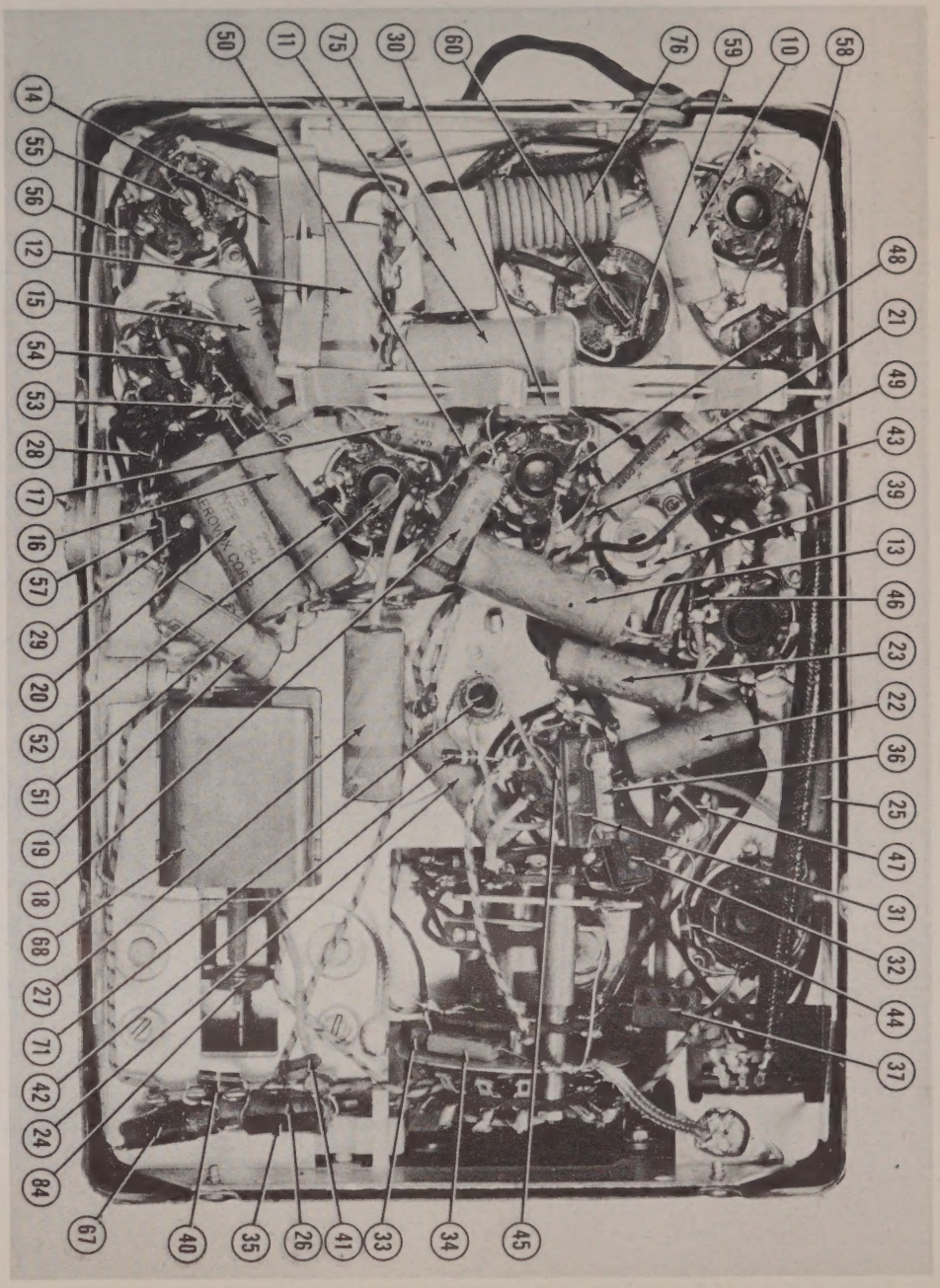
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR CHIEF PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.		ST-568		
65	4.1Ω	3.3Ω	11163	Mod. E6-RS		
	CONE DIA.	VC DIA.				
66	6"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
67	Ant. RF Ch.	.8Ω		38279		
68	Ant. Coil		7Ω	38273		Items 68, 69, 70 ganged together and slug tuned.
69	RF Coil		7Ω	38273		
70	Osc. Coil		1.5Ω	38273		
71	Osc. Padder		1.5Ω	38280		
72A	Wave Trap			38276		Items 72A, 72B are in same shielded can.
72B	Image Trap	6Ω		38276		
73	Input IF	11.5Ω	11.5Ω	38274	16-6658	
74	Output IF	12.5Ω		38275	16-6670	
75	Vib. RF Ch.	0Ω		38277		
76	"A" RF Ch.	0Ω		38278		

CHASSIS—BOTTOM VIEW



NOTE: VOLTAGE AND RESISTANCE READINGS IN "MANUAL" POSITION.

VOLTAGE READINGS

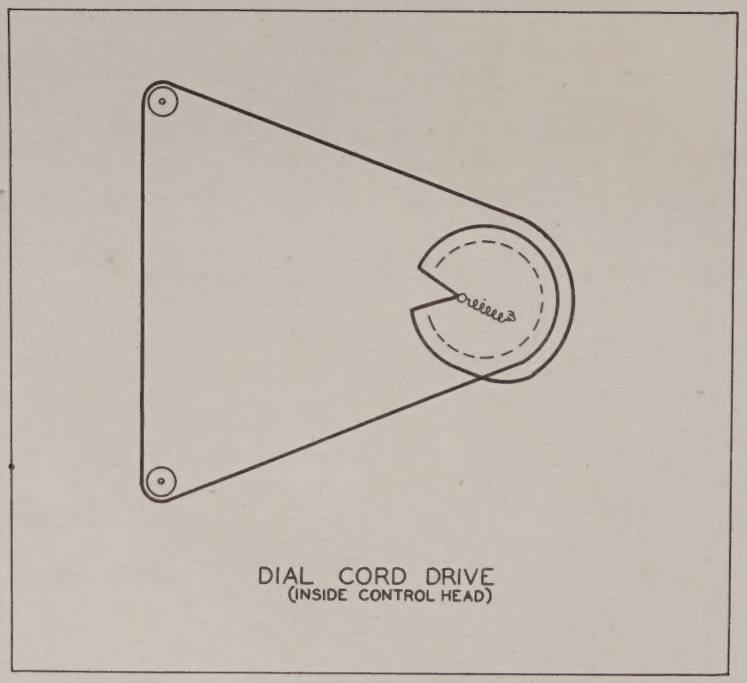
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	0V.	1VDC	55VDC	6VDC	172VDC
2	6SA7	0V.	0V.	207VDC	55VDC	-.4VDC	0V.	6VDC	-.7VDC
3	6SK7	0V.	0V.	0V.	0V.	1.55VDC	55VDC	6VDC	207VDC
4	6SQ7	0V.	-.35VDC	.15VDC	-.3VDC	-.3VDC	107VDC	6VDC	0V.
5	6J5GT	0V.	0V	118VDC	0V	5VDC	207VDC	6VDC	97VDC
6	6K6GT	0V.	0V	223VDC	207V.DC	0V.	227VDC	6VDC	17VDC
7	6K6GT	0V.	0V	223VDC	207VDC	0V.	0V.	6VDC	17VDC
8	0Z4	0V.	0V.	270VAC	0V.	270VAC	0V.	0V.	227VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	2.2MEG	95Ω	165KΩ	.3Ω	155KΩ
2	6SA7	0Ω	0Ω	145KΩ	165KΩ	18.5KΩ	5Ω	.3Ω	1.8MEG
3	6SK7	0Ω	0Ω	0Ω	10Ω	208Ω	165KΩ	.3Ω	145KΩ
4	6SQ7	0Ω	10MEG	330Ω	480KΩ	480KΩ	360KΩ	.3Ω	0Ω
5	6J5GT	0Ω	0Ω	365KΩ	INF	10MEG	200KΩ	.3Ω	205KΩ
6	6K6GT	0Ω	0Ω	145KΩ	145KΩ	410KΩ	180KΩ	.3Ω	450KΩ
7	6K6GT	0Ω	0Ω	145KΩ	145KΩ	470KΩ	INF	.3Ω	450Ω
8	0Z4	0Ω	INF	175Ω	INF	195Ω	INF	INF	145KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE
(INSIDE CONTROL HEAD)

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIR CHIEF PART No.		INSTALLATION NOTES
77	Bayonet	6-8	.2	White			Type 51
78	"	"	"	"			" "
79	"	"	"	"			" "
80	"	"	"	"			" "
81	"	"	"	"			" "
82	"	"	"	"			" "

MISCELLANEOUS

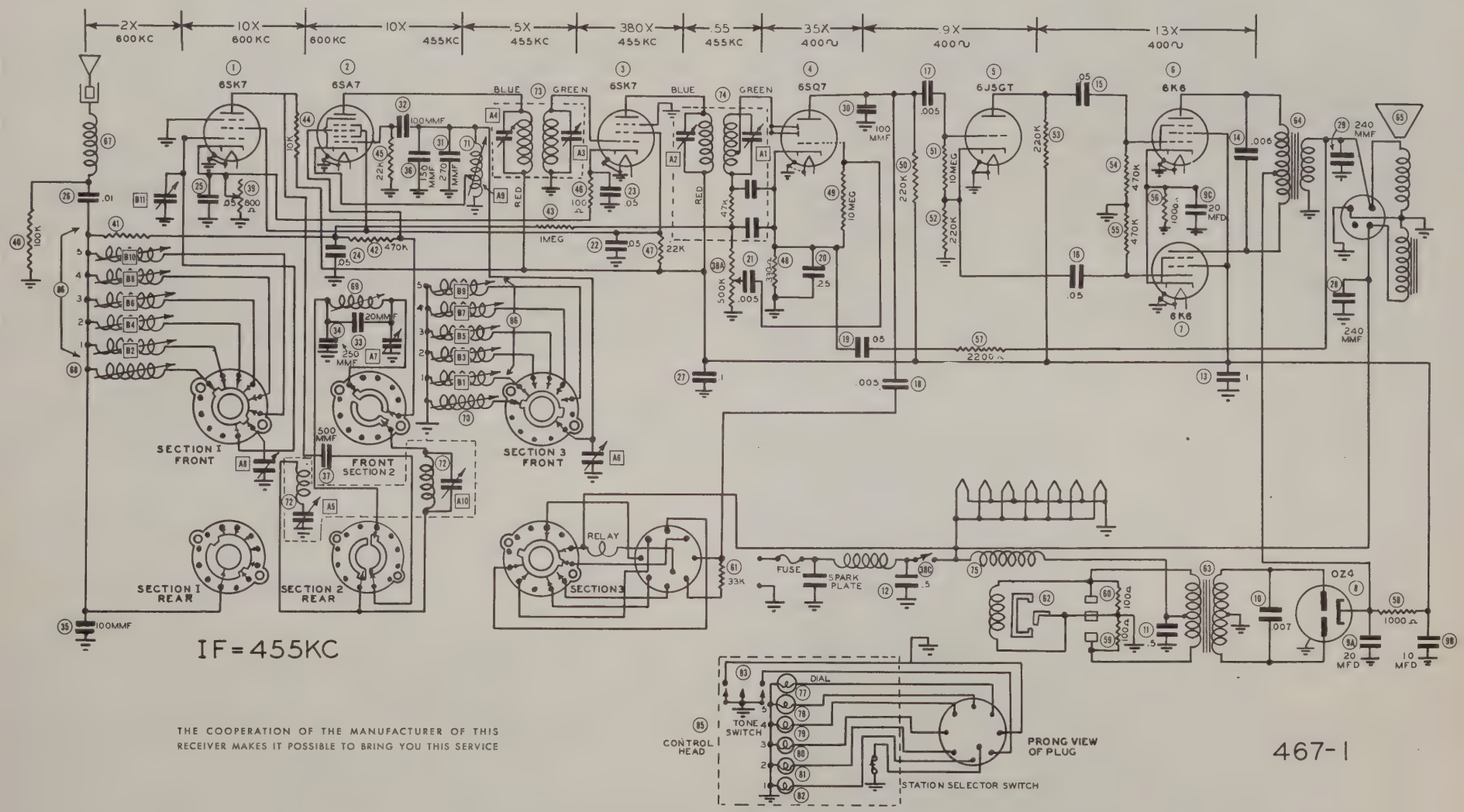
ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
83	Tone Switch	Part of 15536	Inside Monomatic Tuner
84	Tuner Assby.	38273	Permeability Tuner
85	Control Unit	41100	PB Head
86	PB Coil Assby.	38311	Automatic Tuning Coils
A6	Trimmer Cap. }	26114	Osc. Adjustment
A7	" " }		RF Adjustment
A8	" " }	26113	Ant. Adj. Manual Tuning
B11	" " }		Ant. Adj. Automatic Tuning
	Monomatic Tuner	15536	
	Switch Assby.	90070	Automatic Tuning
	Control Socket	80136	
	Ant.Cable Recp.	561367	
	Fuse Holder	11160	
	Cable	15057	Volume Control
	"	27178	Speaker
	Slide Rule Dial	13428	
	Knob	59314	Volume & Tuning
	Control Cable	15057	Manual Tuning
	"Worm Reduction"	13538	Tuning Control
	Shaft Bushing	13537	Volume
	Flexible Cable	27298	Dial Drive

PUSH BUTTON ADJUSTMENTS

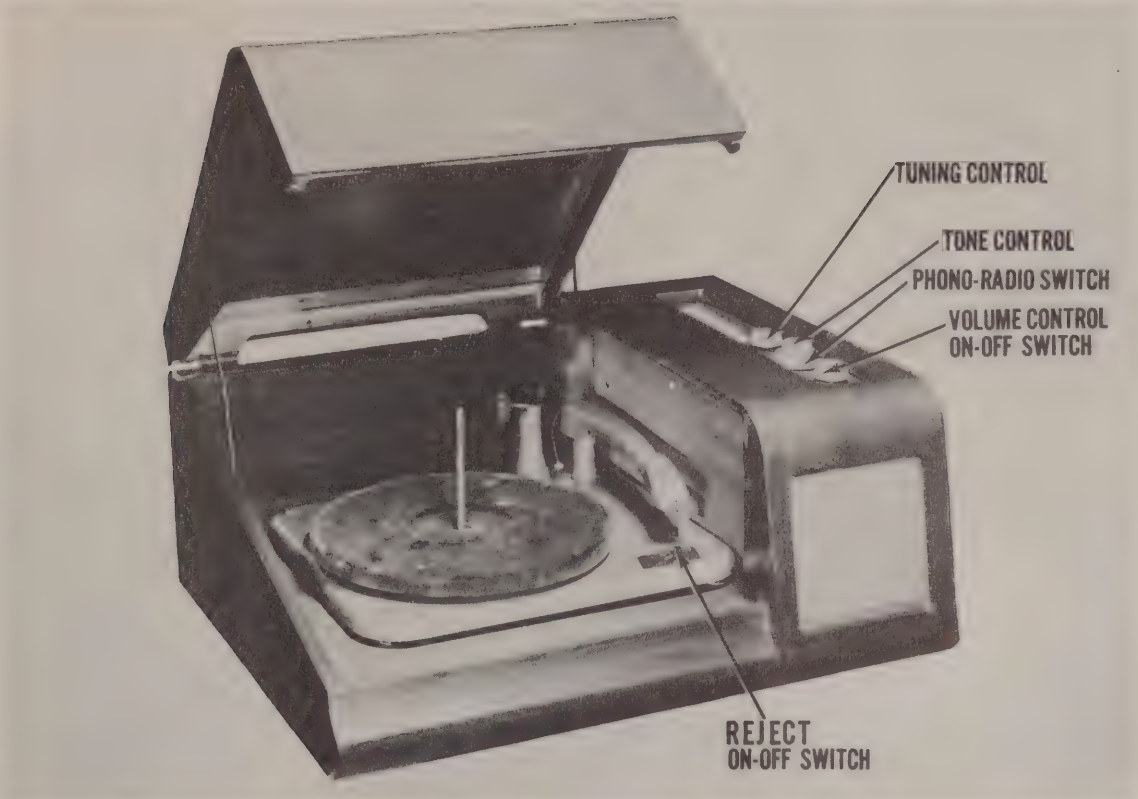
Frequency range of buttons from top to bottom:

540 - 920 KC, 680 - 1170 KC, 850 - 1450 KC, 850 - 1450 KC, 920 - 1570 KC.

1. Select five stations to be set up making sure each will fall within tuning range of buttion to be used.
2. Press monomatic button for dial tuning and tune in #5 station. Press button until #5 station indicator (farthest right) is illuminated. Tune B9 for maximum signal from #5 station.
3. Adjust B11 for maximum response.
4. Press monomatic button for dial tuning and tune in #1 station. Press button until #1 station indicator is illuminated. Tune B1 for maximum signal from #1 station.
5. Using 5/16" open end wrench, adjust B2 for further increase in signal. Recheck B1 for maximum signal.
6. Adjust remaining buttons #2 thru #5 as in steps 4 and 5, adjusting B3, B5, B7 and B9 to tune in desired stations and B4, B6, B8 and B10 for maximum response.
7. After all five buttons are set, press monomatic button until #5 station indicator is illuminated and adjust B11 for maximum response with receiver installed in car.



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



ARIA
MODEL 554-1-61A

ARIA
MODEL 554-1-61A

ARIA MODEL 554-1-61A

TRADE NAME	Aria Model 554-1-61A
MANUFACTURER	International Detrola Co., Detroit, Michigan.
TYPE SET	AC Operated Combination Automatic Phono. - Superheterodyne Receiver, Self Contained Loop Antenna.
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7GT Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105 - 125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING ..490 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Set volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 of 12SA7. Low side to B-.	455KC	High freq. end of dial. (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
	Loop	1620KC	"	"	A5	Connect output of signal generator to two turns of wire and radiate signal into receiver loop. Adjust for maximum output.
	"	1400KC	Tune for maximum output.	"	A6,A7.	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ARIA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARIA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	15	450		FP339		EL-205	AF44J	UP6CJ17	■ Filter
B	10	350							▲ "
C	20	25					PRS25-25		Cath. Bypass
8	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Line Bypass
9	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	6K6 Plate Bypass
10	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
11	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
12	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
13	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
14	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Tone Compensation
15	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	IF Plate Bypass
16	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
17	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Screen Bypass
18	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
19	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	220	500		MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
21	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Compensation
22	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor

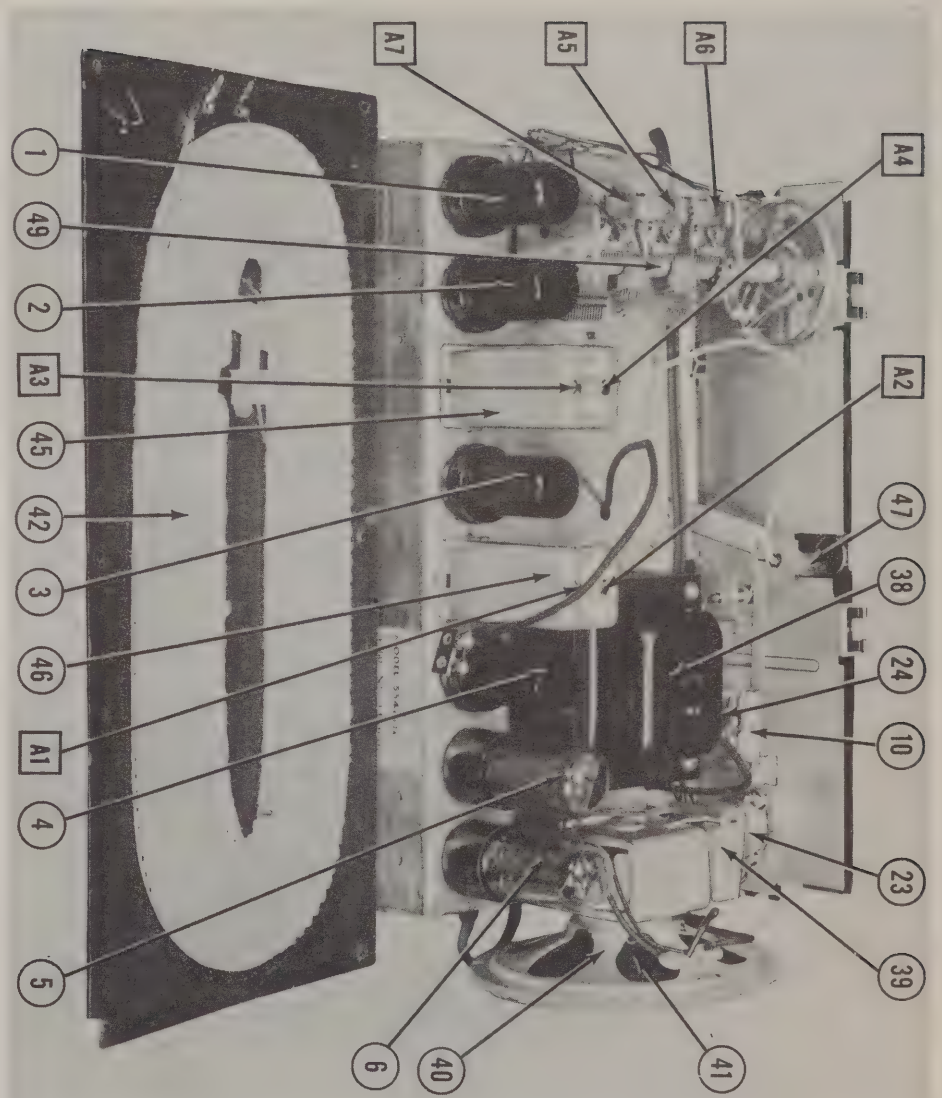
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARIA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	1	B55575-1	TM-233	D18-133X	AT88	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
24A	500KΩ	1	B55550-1	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARIA PART No.	IRC PART No.	IDENTIFICATION CODES
25	100KΩ	1/3	BR17B104	BTS-100K	Br.-Blk.-Yl. AVC Network
26	3.3 Meg.	1/3	BR17B335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
27	1000Ω	1/3	BR17B102	BTS-1000	Br.-Blk.-Red RF Coil Shunt
28	22KΩ	1	BR17E223	BTA-22K	Red-Red-Or. Screen Dropping
29	22KΩ	1/3	BR17B223	BTS-22K	Red-Red-Or. Osc. Grid
30	15KΩ	2	BR17G153	BT-2-15K	Br.-Grn.-Or. Converter Screen Dropping
31	15 Meg.	1/3	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
32	1000Ω	1/3	BR17B102	BTS-1000	Br.-Blk.-Red IF Plate Filter
33	10KΩ	1/3	BR17B103	BTS-10K	Br.-Blk.-Or. Tone Compensation
34	6.8 Meg.	1/3	BR17B685	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
35	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. 1st AF Plate Load
36	100KΩ	1/3	BR17B104	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
37	560Ω	1	BR16E561	BTA-560	Grn.-Blue-Br. Output Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ARIA PART No.	STANCOR PART No.	THORDARSON PART No.	
38	117VAC @ .490A	610VCT @ .073A	5.1VAC @ 1.8A	6.4VAC @ 1.8A	C-51502	P-6120	T-22R04	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARIA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	8500Ω	3.2Ω	700Ω	.75Ω	Part of C-51512	A-3856*	T-22S47*		*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARIA PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.		ST-450†		
40	460Ω	3.2Ω	C-51512	Mod. H5-S		†Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
41	4¼"	½"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ARIA PART No.	MEISSNER PART No.	
42	Loop Ant.		1Ω			
43	RF Coil	30Ω	5Ω	B51511	14-1027	
44	Osc. Coil		5.6Ω	B51522	14-1040	
45	Input IF	28Ω	22Ω	B51416-2	16-6658	
46	Output IF	26.7Ω		B51417-2	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ARIA PART No.		
47	Bayonet	6-8	0.25	Blue			Type 44

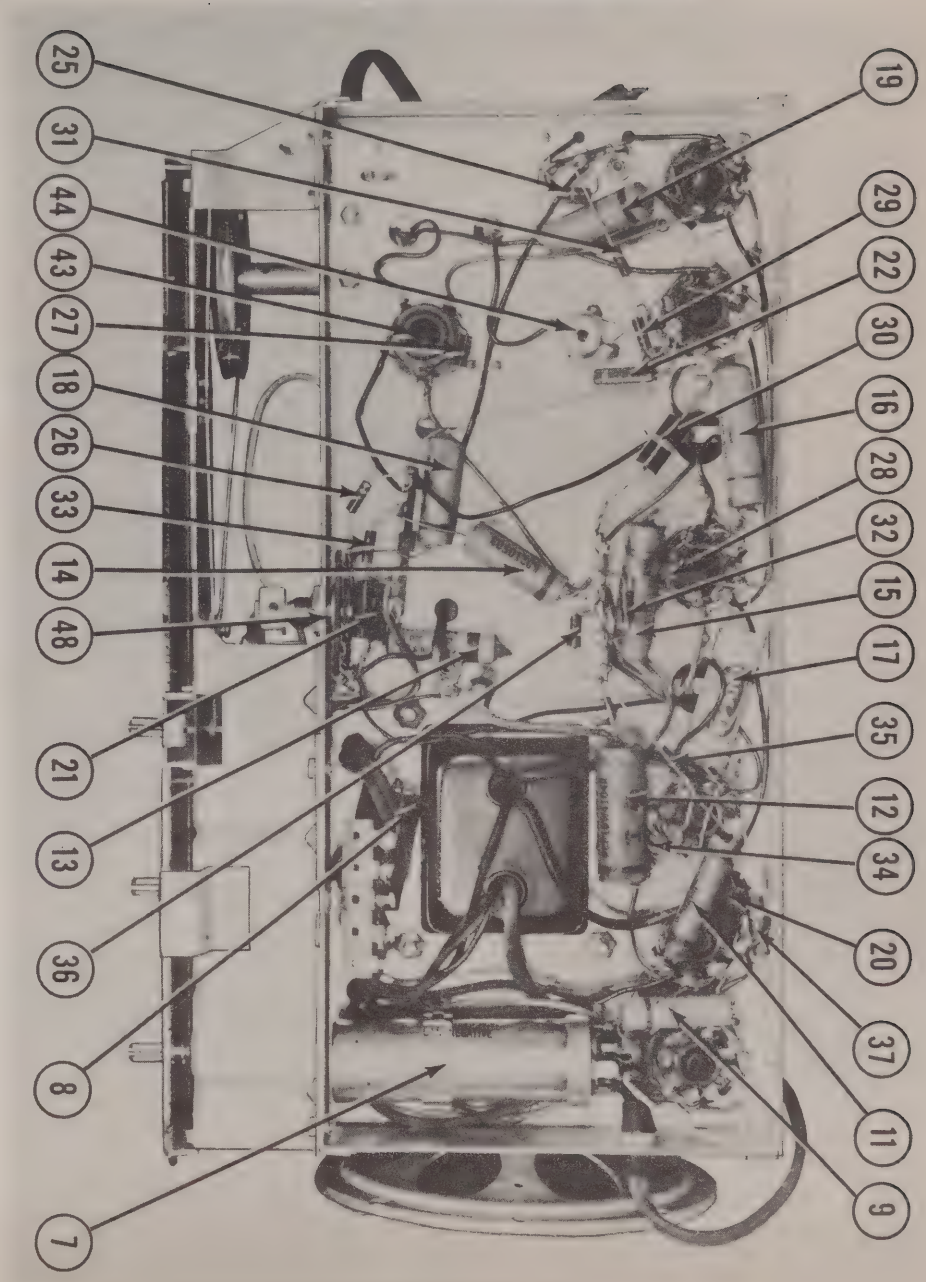
MISCELLANEOUS

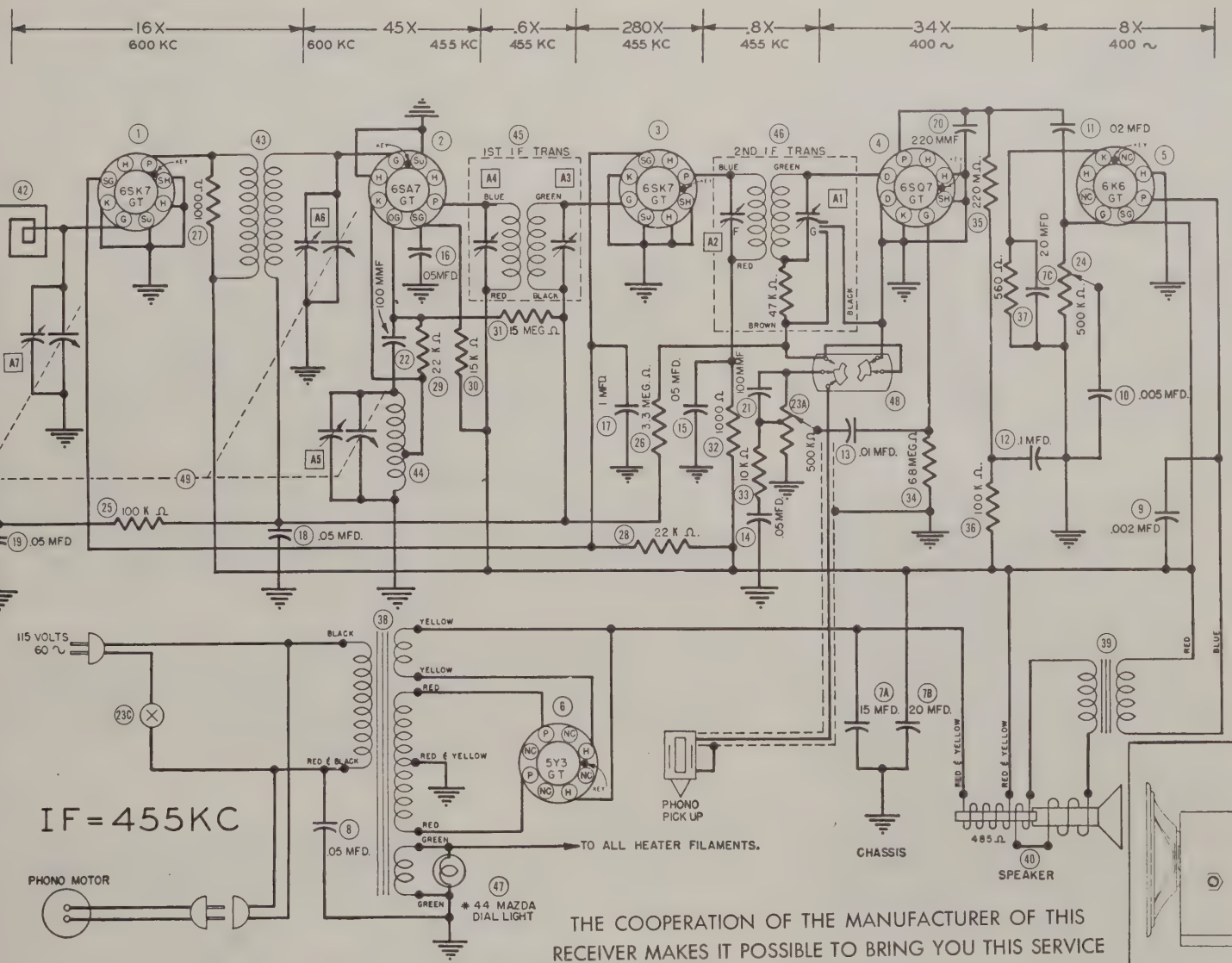
ITEM No.	PART NAME	ARIA PART No.	NOTES
48	Switch	B-55500-1	Radio-Phono
49	Tuning Cap.	C-51501-1	

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type knobs from the front panel.
2. Remove four hex head screws and two washers from the two brackets holding one side of chassis to the cabinet. Remove the two brackets.
3. Remove four hex head screws from cardboard side grill of receiver. Remove grill.
4. Remove the two small hex head screws and washers and two larger hex head screws and washers from the bracket holding the other side of chassis to the cabinet.
5. Disconnect the phono-motor plug.
6. Unsolder the phono-pickup leads from the terminal strip on the back of the chassis.
7. Unsolder the black and green loop antenna leads.
8. Remove chassis from cabinet.

CHASSIS—BOTTOM VIEW




16X
600 KC
45X
600 KC
455 KC
6X
455 KC
280X
455 KC
8X
455 KC
34X
400 ~
8X
400 ~
6SK7 GT
6SA7 GT
6SQ7 GT
6K6 GT
5Y3 GT
1ST I.F. TRANS
2ND I.F. TRANS
220 MMF
.02 MFD
.005 MFD.
.1 MFD.
.002 MFD
.05 MFD.
.01 MFD.
.05MFD
100 MMF
1 MFD.
.05 MFD.
100 MMF
.05 MFD.
.05 MFD.
.05 MFD.

AVIOLA
MODEL 509

AVIOLA MODEL 509

TRADE NAME	Aviola Model 509
MANUFACTURER	Aviola Radio Corp., Phoenix, Arizona
TYPE SET	AC Operated Combination Phono. - Superheterodyne Receiver, Self Contained Loop Ant.
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT/G Power Output, 35Z5GT/G Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1625KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at last reference mark at left end of dial. Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
500 MMF.	High side to ext. ant. lead. Low side to chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy to .001 MFD. to reduce excessive hum modulation.
	Place signal generator output lead near receiver loop. (Not connected to it)	1400KC	1400KC	"	A5	Adjust for maximum output.
	"	"	"	"	A6	" " " "
	"	600KC	600KC	"	A7	" " " "
	"	"	"	"	A8	Adjust for maximum output. Recheck A5 and A6 at 1400KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AVIOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amplifier	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT/G	50L6GT/G	7AC	
5	Rectifier	35Z5GT/G	35Z5GT/G	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AVIOLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	20	150	12104-/20-20	TN129	DSB-3x20-150	TA-220	PRSA150-20-20	EZ42215	Filter - Red
B	20	150				UT-201	PRS150-20		" "
C	20	150							" "
7	10	50		TC32	M-10-50	TA-510	PRS50-10	BR105	50L6 Cath. Bypass
8	.05	200	12105-10	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.005	600		TP407	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
10	.01	400	12002-01	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	400	12002-01	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.05	200	12000-05	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	.1	200	12000-1	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
14	250	500	12010-250	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
15	2000	300	12012-2000	MC457	MW-5-22	1FM-22	1467-002	1W5D2	Phono Coupling
16	250	500	12010-250	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Diode
17	250	500	12010-250	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fixed Trimmer
18	2000	300	12012-2000	MC457	MW.5-22	1FM-22	1467-002	1W5D2	Osc. Feedback
19	50	500	12010-50	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
20	100	500	12010-100	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AVIOLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	R-1043-2	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
22A	500KΩ	1	R-1247	MR41	D11-128	M-49-S	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions

RESISTORS

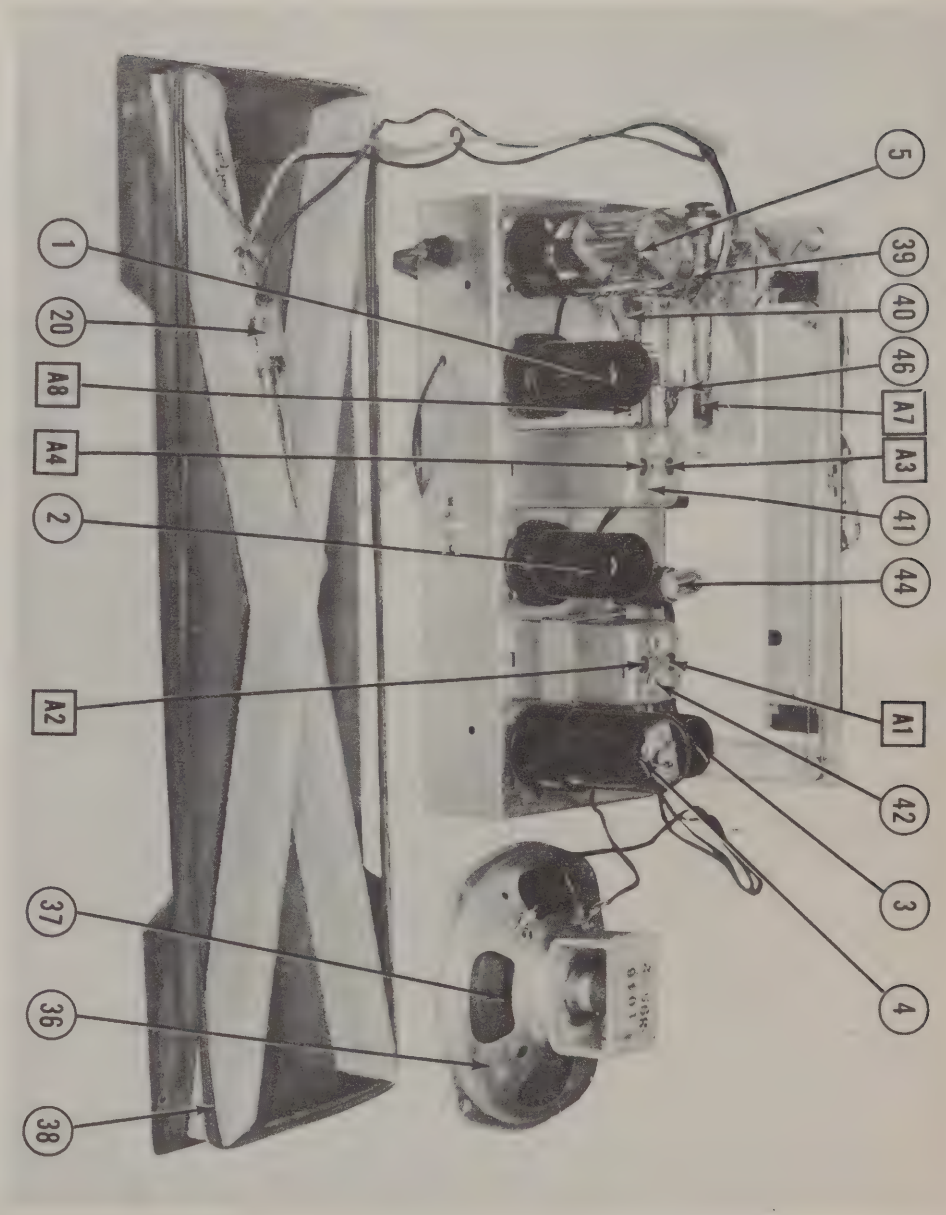
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AVIOLA PART No.	IRC PART No.	IDENTIFICATION CODES
23	33KΩ	½	11005-333	BTS-33K	Or.-Or.-Or. Osc. Grid
24	2.2 Meg.	½	11005-225	BTS-2.2 Meg	Red-Red-Grn. AVC Network
25	47KΩ	½	11005-473	BTS-47K	Yl.-Vi.-Or. IF Filter
26	220KΩ	½	11005-224	BTS-220K	Red-Red-Yl. Phono Load *
27	6.8 Meg.	½	11005-685	BTS-6.8 Meg	Blue-Gray-Grn. 1st AF Grid
28	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
29	220KΩ	½	11005-224	BTS-220K	Red-Red-Yl. Output Grid
30	150Ω	½	11005-151	BW-½-150	Br.-Grn.-Br. Output Cathode
31	1200Ω	1	11008-122	BTA-1200	Br.-Red-Red Filter
32	330Ω	1	11008-331	BW-1-330	Or.-Or.-Br. Filter
33	330	½	11005-151	BW-½-150	Br.-Grn.-Br. Pilot Light Shunt
34	220KΩ	½	11005-224	BTS-220K	Red-Red-Yl. Line Isolating

*Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AVIOLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
35	1800Ω	3.5Ω	140Ω	.65Ω	R-1040-1	A-3876	T-22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AVIOLA PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-108	
36	PM	3.5Ω	R-1046	Mod. P5-W	
	CONE DIA.	VC DIA.			
37	4½"	½"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AVIOLA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
38	Loop Ant.	0Ω		R1076		
39A	Loop Coupl.	7.5Ω		R1166		
B	Ant. Coupl.	0Ω		R1093		
C	Ant. Coil	10Ω		R11162‡		
40	Osc. Coil		2.5Ω	R1163‡		
41	Input IF	46Ω	45Ω	R1025-1	16-6666	
42	Output IF	24Ω	24Ω	R1025-2	16-6667	
43	Cath. RF Ch.	2.3Ω		R1165		Wound on 7500Ω resistor

‡Ganged together and slug tuned.

DIAL LIGHT

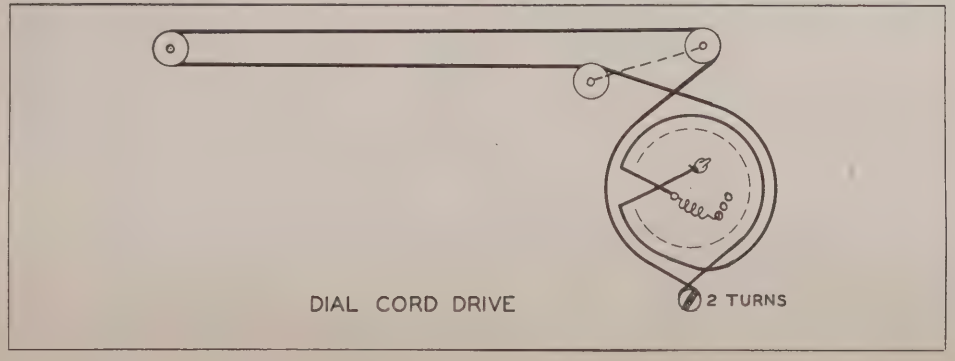
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AVIOLA PART No.		INSTALLATION NOTES
44	Min. Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

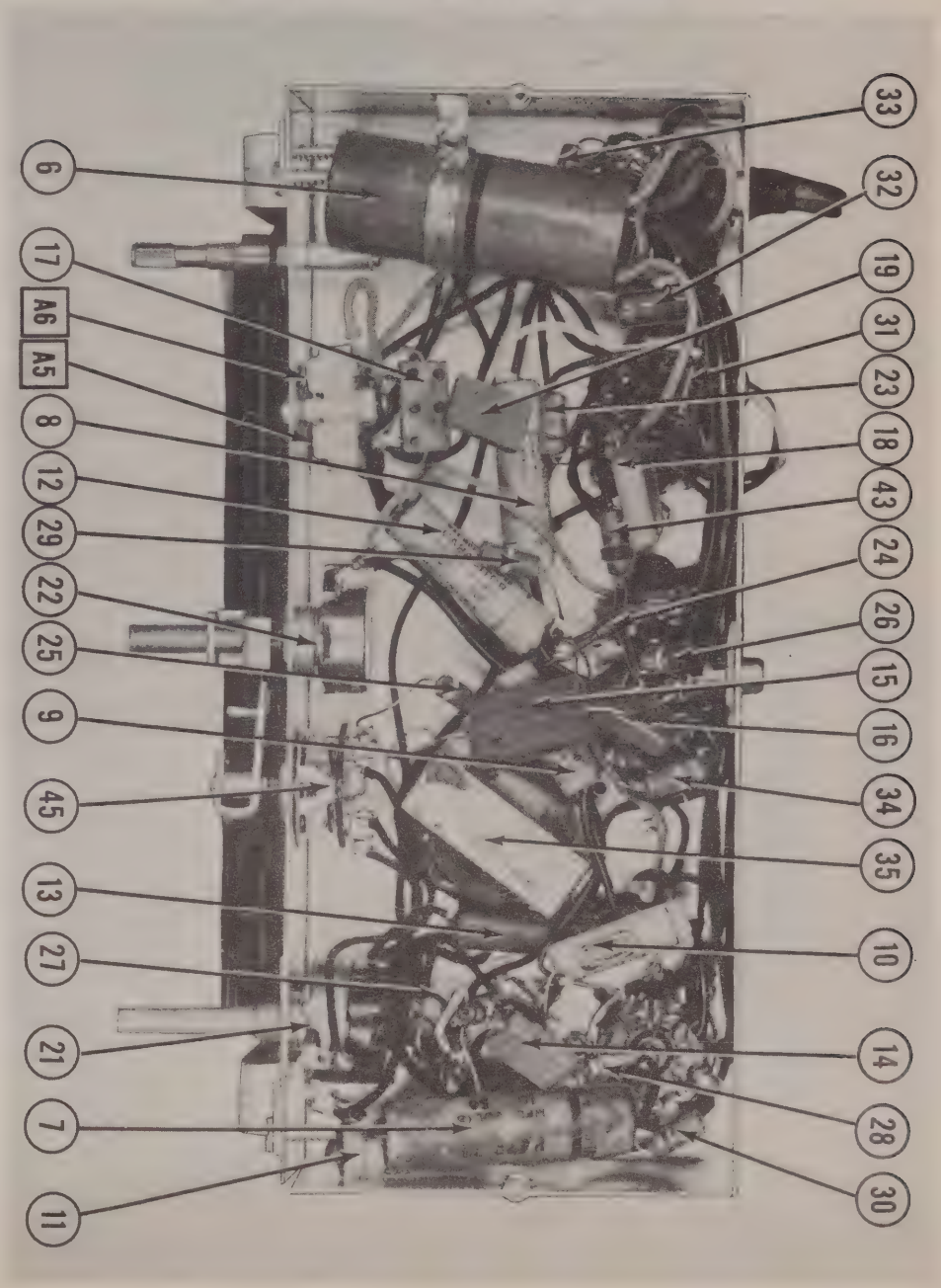
ITEM No.	PART NAME	AVIOLA PART No.	NOTES
45	Switch	R-1248	Radio-Phono
46	Tuner Assby.		
	Dial	R-1052	Glass
	Pointer	R-1255-1	Dial
	Cabinet	R-5002	
	Knobs	R-1051	
	Lid Bracket	R-5056	

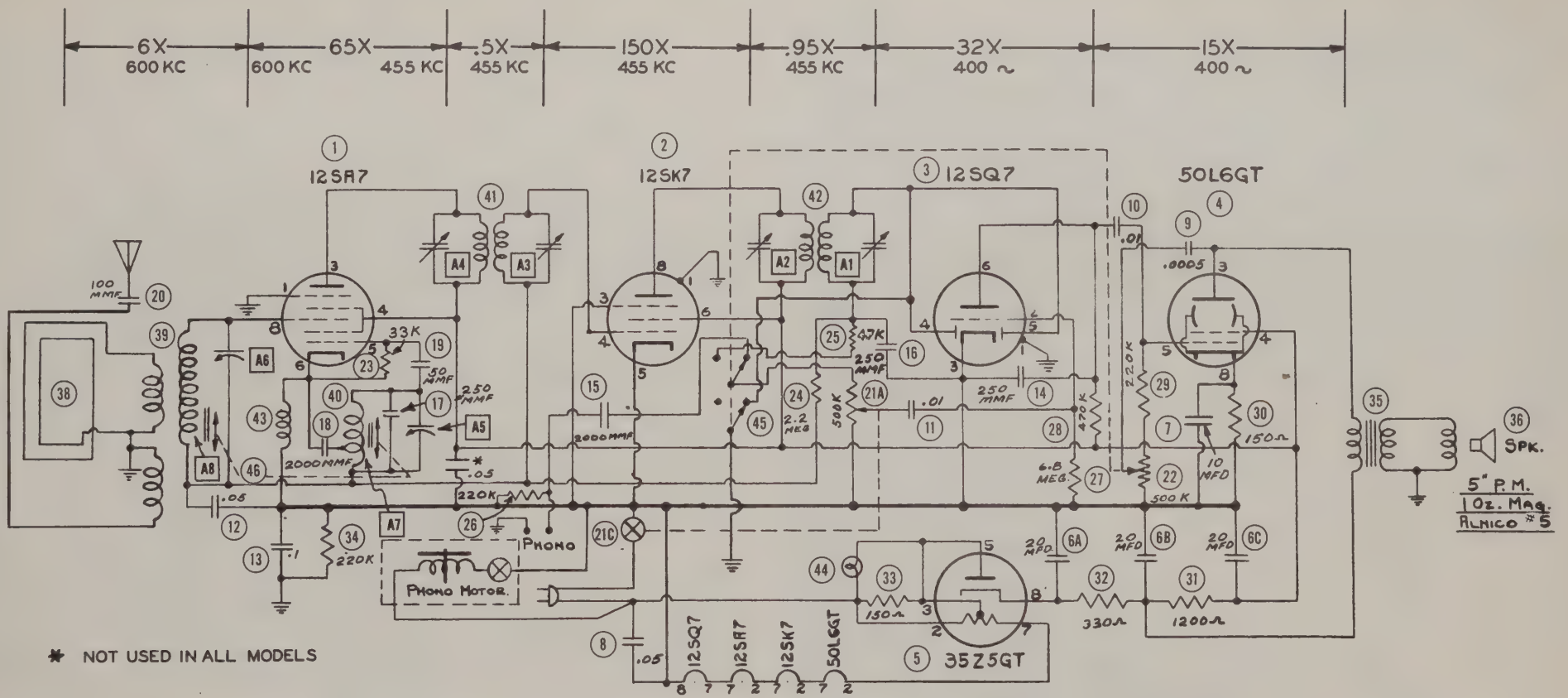
DISASSEMBLY INSTRUCTIONS

1. Remove two set screw type knobs and one push-on type knob from front panel.
2. Remove four wood screws from antenna loop on back of cabinet.
3. Disconnect phono-pickup plug from back of chassis.
4. Disconnect phono-motor plug.
5. Remove three hex head screws holding chassis to cabinet.
6. Remove four wood screws holding speaker mounting board to cabinet. Remove speaker mounting board, speaker and chassis from cabinet.
7. Remove four nuts and lock washer from speaker mounting board. Remove speaker.



CHASSIS—BOTTOM VIEW





NOTE: VOLTAGE AND RESISTANCE READING TAKEN IN RADIO POSITION

467-3

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	-3V.DC	25.5V.AC	80V.DC	80V.DC	-4V.DC	0V.	125V.AC	-1.2V.DC
2	12SK7	-3V.DC	25.5V.AC	0V.	-1.2V.DC	0V.	80V.DC	37V.AC	80V.DC
3	12SQ7	-3V.DC	-5V.AC	0V.	-3V.DC	-3V.DC	50V.DC	12.5V.AC	0V.
4	50L6GT/G	0V.	89V.AC	98V.DC	80V.DC	0V.	0V.	37V.AC	53V.DC
5	35Z5GT/G	0V	117V.AC	113V.AC	0V.	113V.AC	102V.DC	89V.AC	122V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	225KΩ	23 Ω	140KΩ	140KΩ	32KΩ	2 Ω	12 Ω	2.7MEG
2	12SK7	225KΩ	23 Ω	0 Ω	2.7MEG	0 Ω	140KΩ	35 Ω	140KΩ
3	12SQ7	225KΩ	6.5MEG	0 Ω	470KΩ	470KΩ	610KΩ	12 Ω	0 Ω
4	50L6GT/G	INF	78 Ω	140KΩ	140KΩ	320KΩ	0 Ω	35 Ω	135 Ω
5	35Z5GT/G	INF	103 Ω	100 Ω	0 Ω	100 Ω	140KΩ	78 Ω	140KΩ

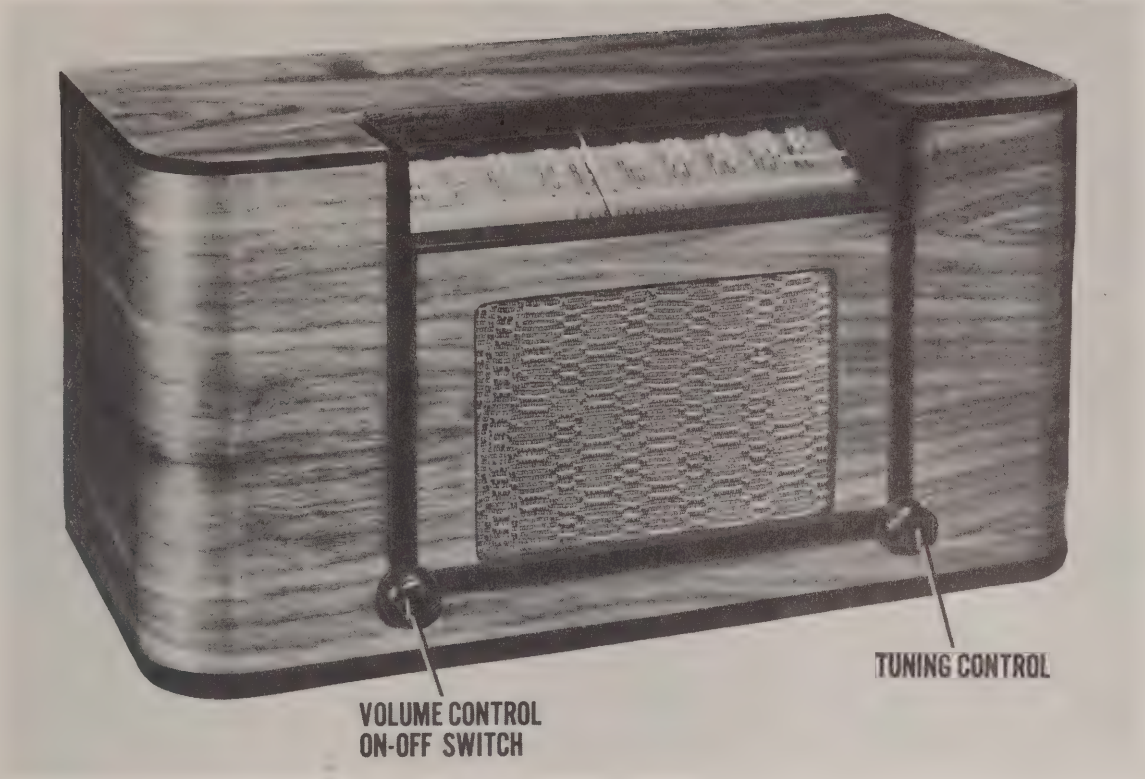
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO
MODEL 43-6301



CORONADO
MODEL 43-6301

CORONADO MODEL 43-6301

TRADE NAME	Coronado Model 43-6301
SUPPLIER	"Coronado" Minneapolis, Minn. - Los Angeles, Calif., Ill.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY	90 Volt "B" Battery & 1½ Volt "A" Battery-Coronado Battery #42-326 or equivalent
TUNING RANGE—BROADCAST	535-1725KC RATING 14MA @ 90V DC & 245MA @ 1.5V DC

ALIGNMENT INSTRUCTIONS

Volume control at maximum volume position and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1MFD.	High side to grid cap of 1A7. Low side to chassis.	455KC	High freq.end of dial.(Variable fully open).	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
250 MMF	High side to ant. lead. Low side to chassis.	1725KC	"	"	A5	" " " "
"	"	1500KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5	4	150	A18-273	TC40	M-4-150	UT-41	PRS150-4	BR415	Pwr. Supp. Bypass
6	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	3Q5 Plate Bypass
7	.01	400		TP426	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
8	.01	400		TP426	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
9	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	IF Grid Capacitor
10	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
11	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
12	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
14	50	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
15	50	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Pri. Ant. Shunt

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	1 Meg.	1	A24-165	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

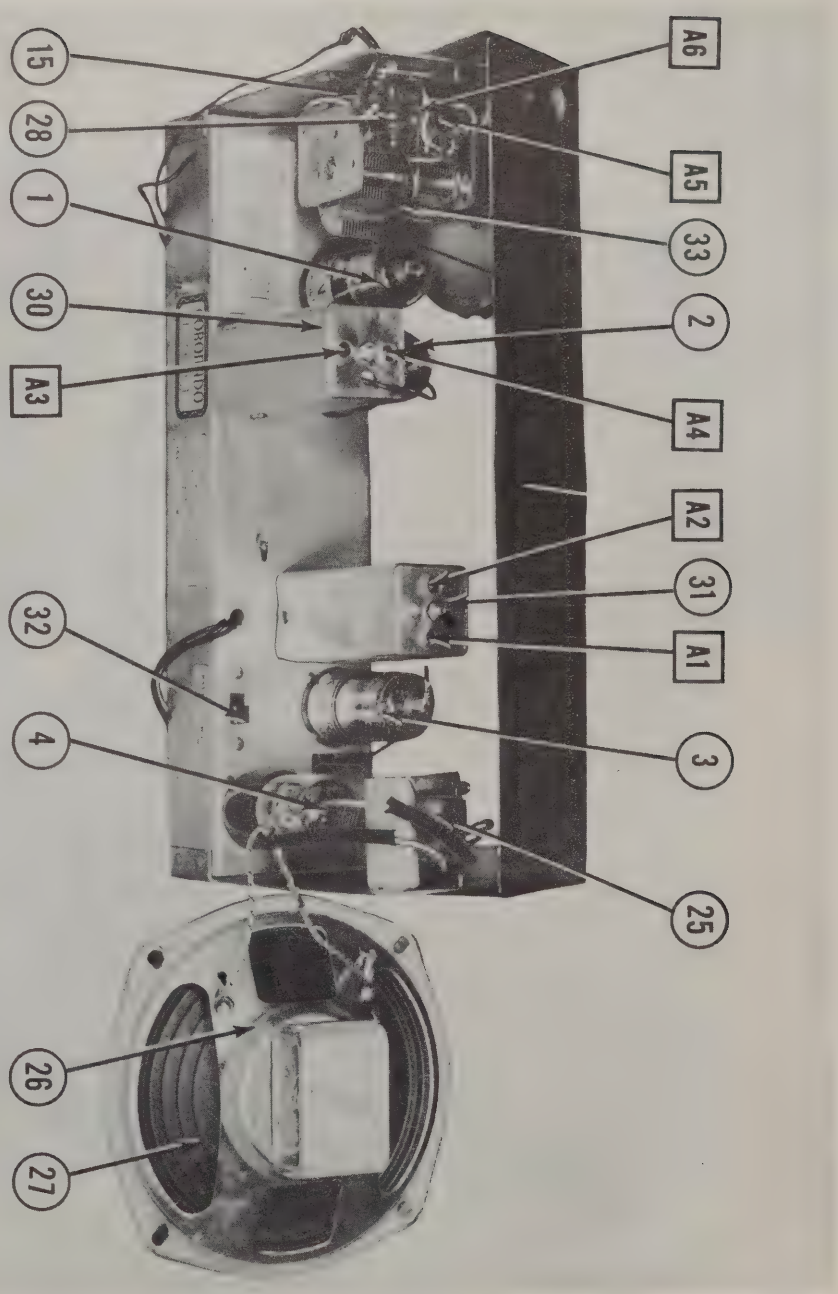
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
17	220KΩ	½		BTS-220K	Red-Red-Yl. Osc. Grid
18	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Screen Dropping
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. IF Grid
20	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
22	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
23	390Ω	½		BW-½-390	Or.-White-Br. Bias
24	.75Ω	1		BW-1-.68	Series Filament

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
25	10000Ω	3.2Ω	325Ω	.7Ω	A80-226	A-3831	T-22847†		†Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA CORONADO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-109		
26A	PM	3.2Ω	B79-348	Mod. P6-W		
B			B79-345			Alternate speaker.
	CONE DIA.	VC DIA.				
27	6"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

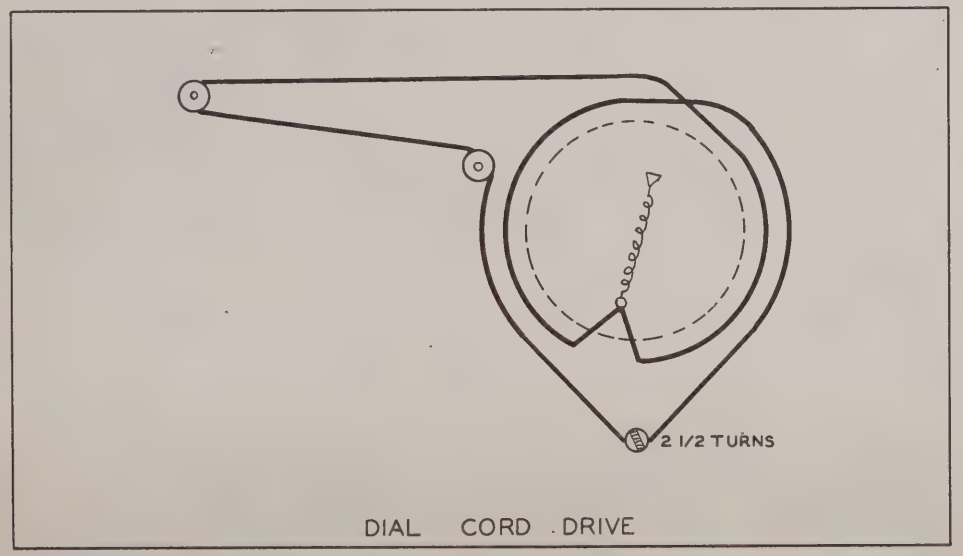
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
28	Ant. Coil	58Ω	3Ω	A10-414	14-1026	
29	Osc. Coil	2Ω	6Ω	A10-415	14-1040	
30	Input IF	4.5Ω	4.3Ω	B10-416	16-5740	
31	Output IF	6.5Ω		B10-417	16-5742*	

*Add from low end secondary, 250 MMFD cap. to ground, 47KΩ resistor to high end vol. control, 1 Meg. resistor to low end ant. coil secondary.

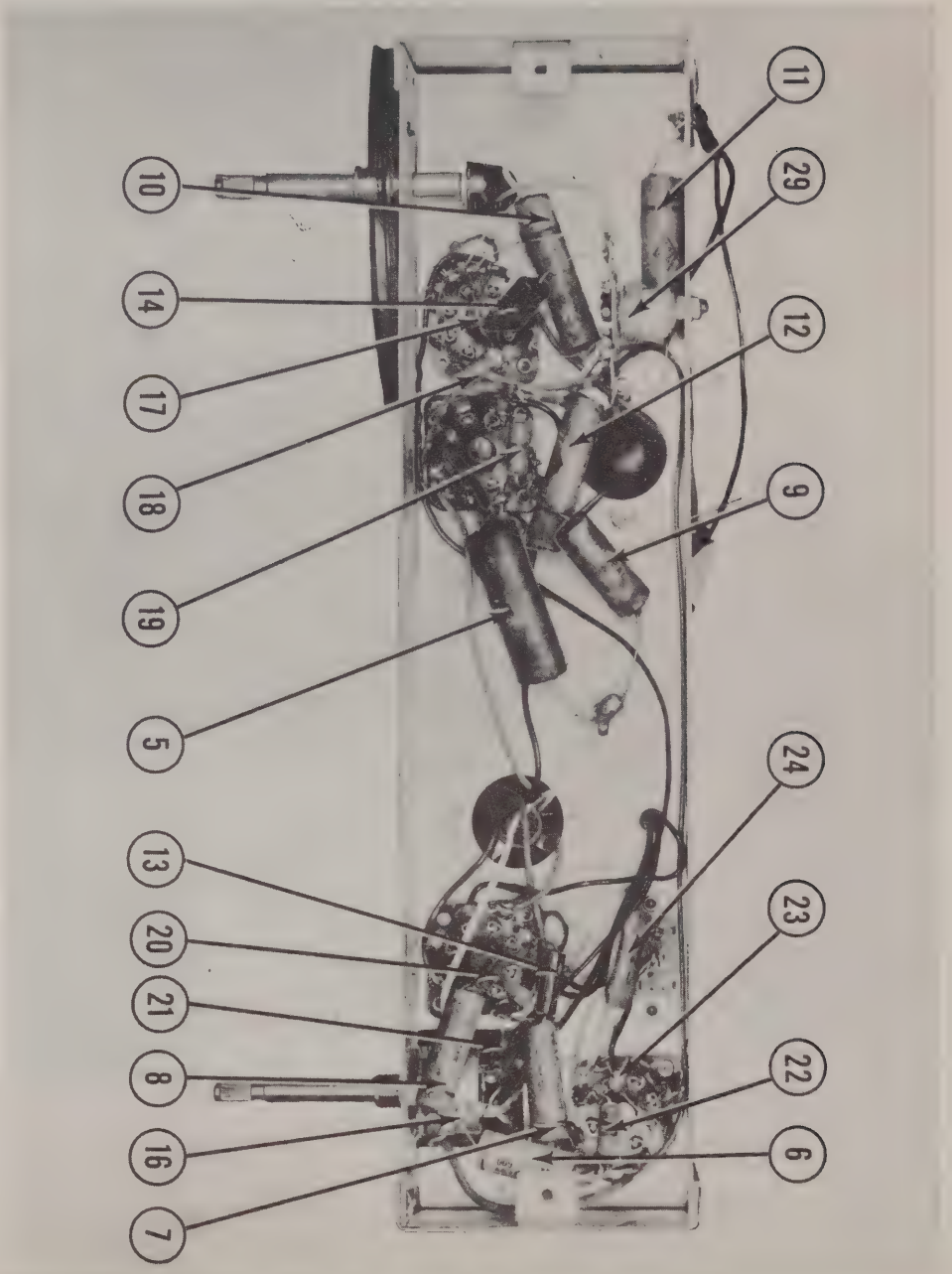
MISCELLANEOUS

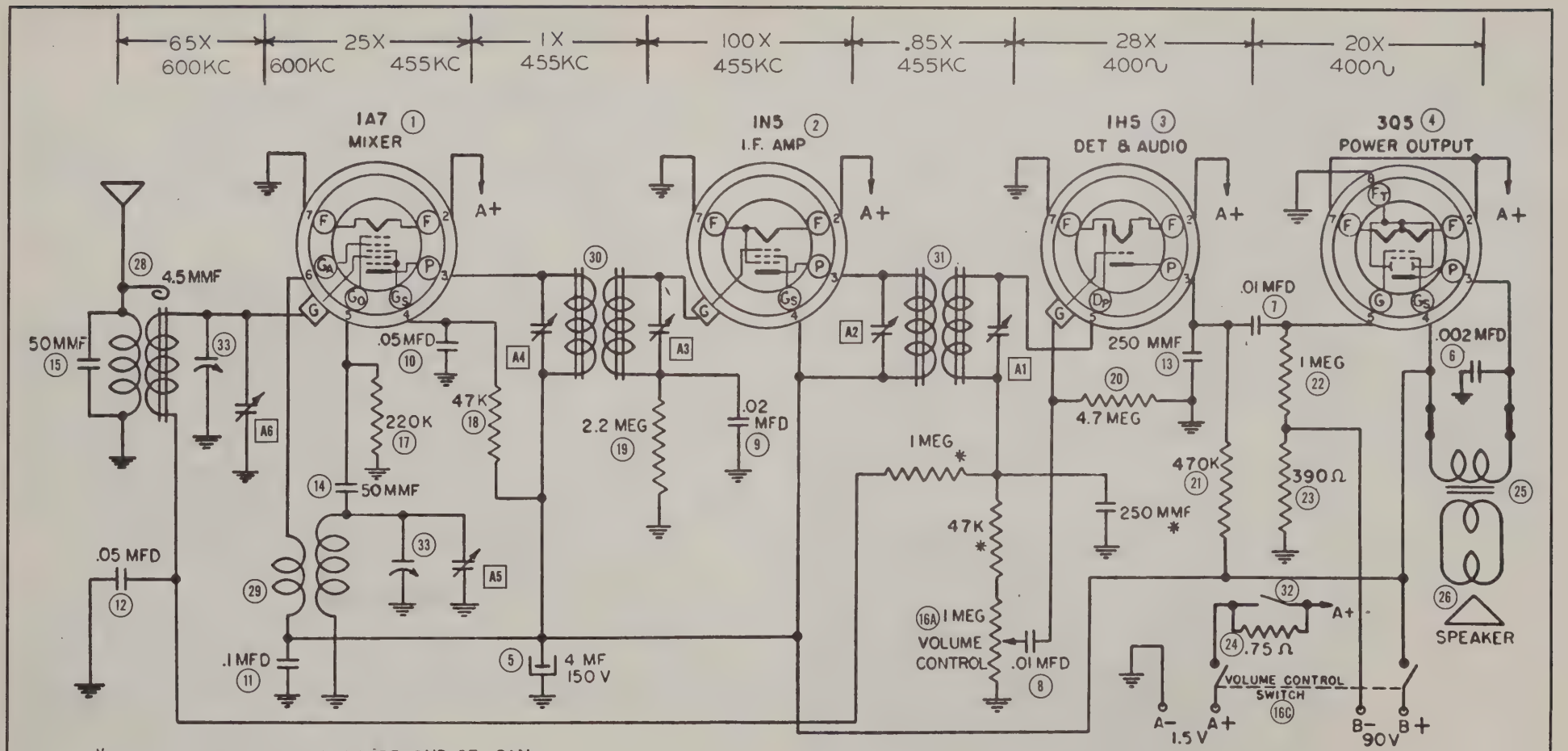
ITEM No.	PART NAME	CORONADO PART No.	NOTES
32	Switch	A69-164	Battery Thriftmaster
33	Tuning Cap.	B19-185	2 Gang Variable Cap.
	Dial Pointer	A58-42	
	Knob	A52-182	
	Cabinet	D42-377	Wood



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





*THESE PARTS LOCATED INSIDE 2ND IF CAN.

IF=455KC

NOTE: VOLT. & RES. READING TAKEN WITH BATTERY SWITCH IN "NEW" POSITION.

467-4

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.4V.DC	89V.DC	40V.DC	0V.	89V.DC	0V.	0V.	0V.
2	1N5GT	0V.	1.4V.DC	89V.DC	89V.DC	0V.	0V.	0V.	0V.	0V.
3	1H5GT	0V.	1.4V.DC	69V.DC	0V.	0V.	0V.	0V.	0V.	0V.
4	3Q5GT	0V.	1.4V.DC	87V.DC	89V.DC	-.45VDC	-5.4V.DC	1.4V.DC	0V.	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0 Ω	2 Ω	62KΩ	109KΩ	185KΩ	62KΩ	0 Ω	I N F	1.9MEG
2	1N5GT	0 Ω	2 Ω	62KΩ	62KΩ	I N F	2 MEG	0 Ω	2.8MEG	2.5MEG
3	1H5GT	0 Ω	2 Ω	530KΩ	4.5MEG	1 MEG	I N F	0 Ω	0 Ω	4.5MEG
4	3Q5GT	0 Ω	2 Ω	62KΩ	62KΩ	1 MEG	360 Ω	2 Ω	0 Ω	

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to ground.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

CORONADO
MODEL 43-8213

CORONADO
MODEL 43-8213

CORONADO MODEL 43-8213

TRADE NAME	Coronado Model 43-8213 (Ch. No. 45D17G)
MANUFACTURER	Coronado Minneapolis, Minn.-Los Angeles, Calif.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .235 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at second mark from left end of dial back plate. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	High freq.end (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
.1 MFD.	"	1400KC	1400KC (Second calibration mark from right end)	"	A5	"
50 MMF.	High side to ext. ant. clip. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	45X341	2N521	DHN-2x50-150	TA-530	PRSA150-40-40	EZ5515	Filter - Red
B	50	150							" - Blue
7	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.2	200		TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
9	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	50L6 Plate Bypass
10	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	" "
12	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	.001	400		TP404	S-6-001	TC-21	484-001	DT6D1	Ant. Coupling
14	220	500		MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
15A	50	300		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Diode Filter
B	50	300		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	" "
16	47	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	36X352	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

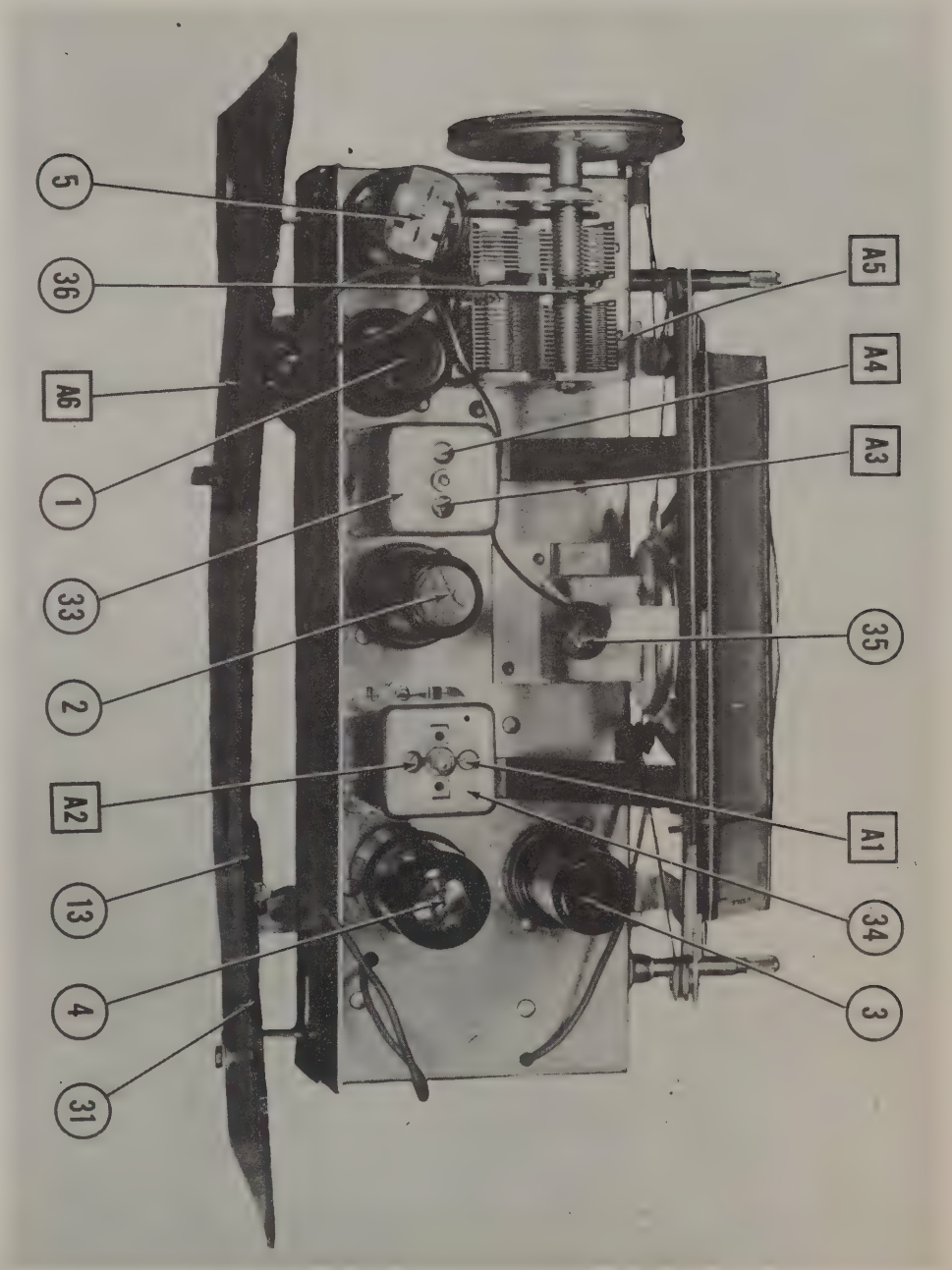
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
18	39KΩ	½		BTS-39K	Or.-white-Or. Osc. Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	47KΩ	½		BTS-47K	Yl.-Vi.-Or. AVC Network
21	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
25	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
26	27Ω	½		BW-½-27	Red-Vi.-Blk. Rectifier Ballast
27	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CORONADO PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
28	3000Ω	3.3Ω	200Ω	.65Ω	51X122	A-3876	T-22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.		
29	FIELD PM	VC IMP. 3.5Ω	12A440	ST-105 Mod. P5-X		
30	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

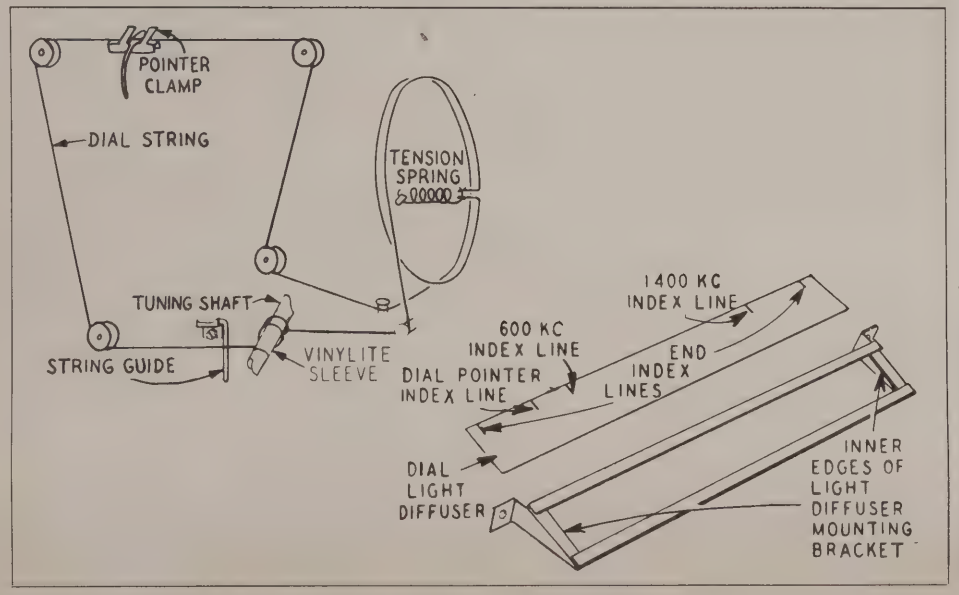
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
31	Loop Ant.	.1Ω	1.5Ω	9A1820		
32	Osc. Coil	.5Ω	6Ω	9A1805	14-1040	
33	Input IF	21.3Ω	21.8Ω	9A1808	16-6658	
34	Output IF	23Ω	19Ω	9A1809	16-6660	

DIAL LIGHT

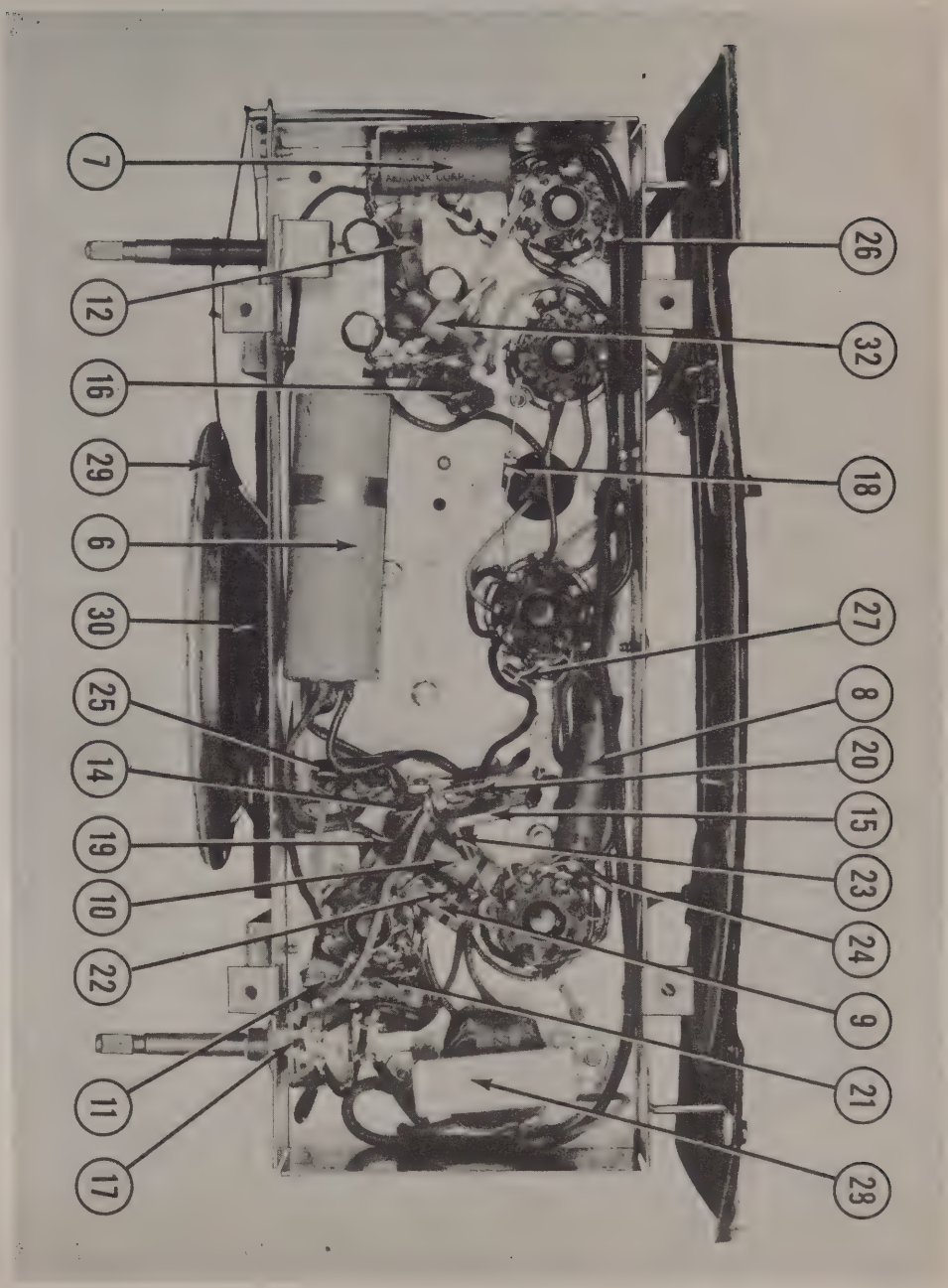
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CORONADO PART No.		
35	Bayonet	6-8	.15	Brown			Type 47

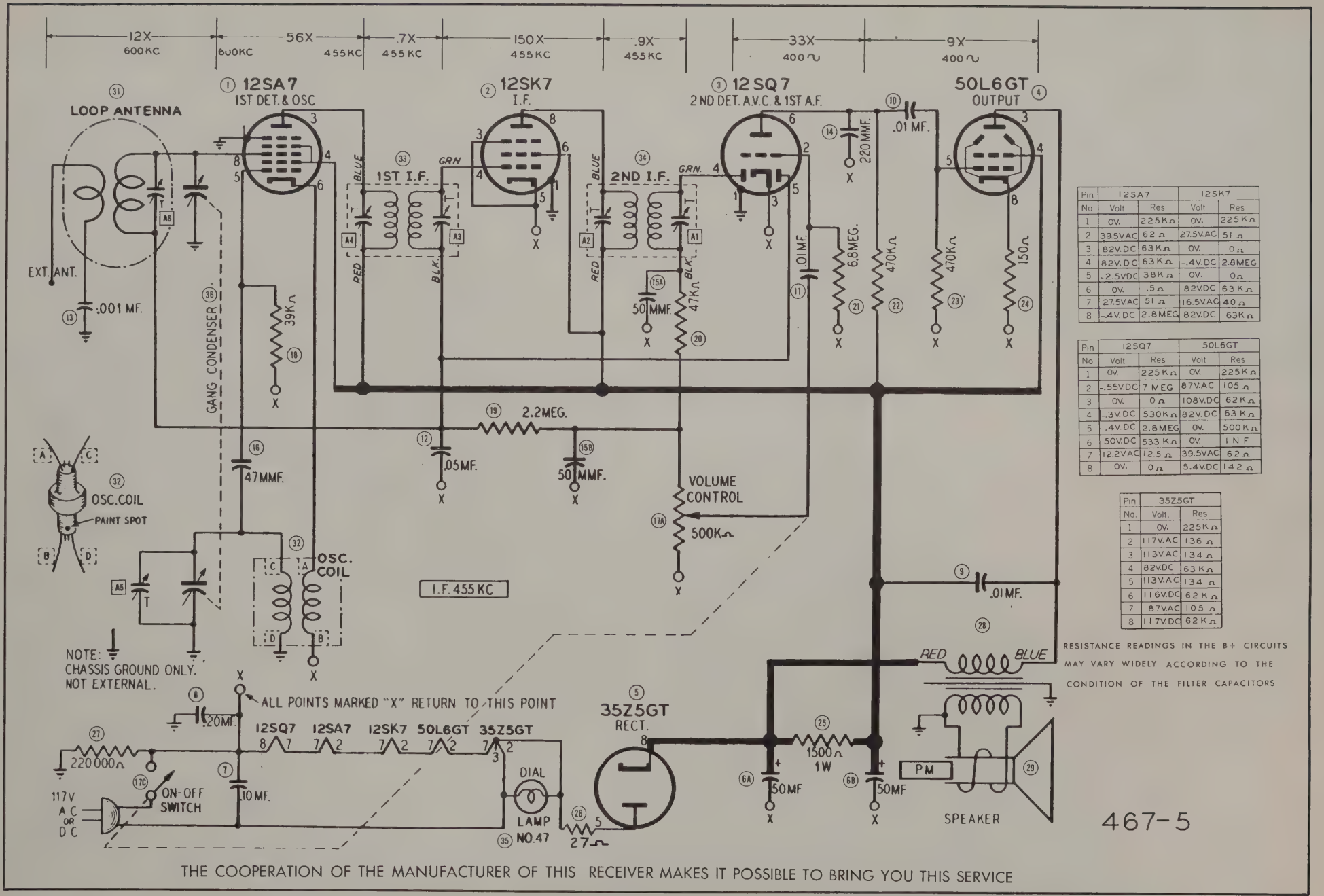
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
36	Tuning Cap.	14A179	2 Gang Variable Cap.



CHASSIS—BOTTOM VIEW





Pin No	12SA7 Volt	12SA7 Res	12SK7 Volt	12SK7 Res
1	0V.	225KΩ	0V.	225KΩ
2	39.5VAC	62Ω	27.5VAC	51Ω
3	82V.DC	63KΩ	0V.	0Ω
4	82V.DC	63KΩ	-.4V.DC	2.8MEG
5	-2.5VDC	38KΩ	0V.	0Ω
6	0V.	.5Ω	82V.DC	63KΩ
7	27.5VAC	51Ω	16.5VAC	40Ω
8	-.4V.DC	2.8MEG	82V.DC	63KΩ

Pin No	12SQ7 Volt	12SQ7 Res	50L6GT Volt	50L6GT Res
1	0V.	225KΩ	0V.	225KΩ
2	-.55V.DC	7 MEG	87V.AC	105Ω
3	0V.	0Ω	108V.DC	62KΩ
4	-.3V.DC	530KΩ	82V.DC	63KΩ
5	-.4V.DC	2.8MEG	0V.	500KΩ
6	50V.DC	533KΩ	0V.	INF
7	12.2VAC	12.5Ω	39.5VAC	62Ω
8	0V.	0Ω	5.4V.DC	142Ω

Pin No.	35Z5GT Volt.	35Z5GT Res
1	0V.	225KΩ
2	117V.AC	136Ω
3	113V.AC	134Ω
4	82V.DC	63KΩ
5	113V.AC	134Ω
6	116V.DC	62KΩ
7	87V.AC	105Ω
8	117V.DC	62KΩ

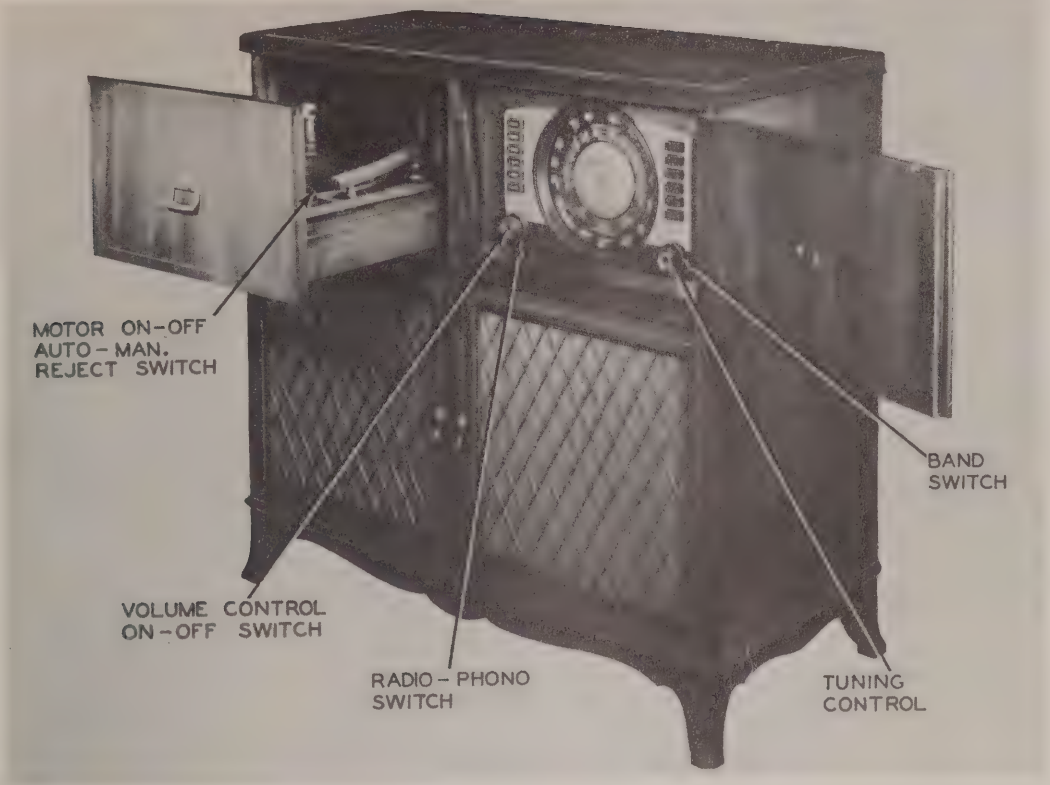
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



CROSLEY
MODELS 106CP, 106CS

CROSLEY
MODELS 106CP, 106CS

CROSLEY MODELS 106CP, 106CS

TRADE NAME	Crosley Models 106CP, 106CS
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC Operated Combination Automatic Phono. - 3 Band Superheterodyne Receiver, Self Contained Loop Antenna and Automatic Tuning.
TUBES (TEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6J5 Phase Inverter, 4-6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105 - 125 Volts AC RATING .840 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC **SHORT WAVE** 2.2 - 6MC, 5.8-18MC

ALIGNMENT INSTRUCTIONS

Turn tuning capacitor completely closed and set pointer to the reference line at the end of the dial scale. Set all tone control buttons out. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Care should be taken when adjusting A11 that the circuit is not aligned on an image. To check; tune in the generator freq., then increase the generator output in and tune the image frequency. The image frequency should be weaker than the fundamental and 910 kilocycles lower on the receiver dial. The correct peak is the second one heard as the trimmer (A11) is opened from the completely closed position.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
200 MMF.	High side to stator of rear section of variable. Low side to chassis.	455KC	BC	Variable fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
200 MMF.	High side to ext. ant. Low side to chassis.	1400KC	"	1400KC	"	A5	" " " "
200 MMF.	"	"	"	Tune for maximum output.	"	A6,A7.	" " " "
200 MMF.	"	600KC	"	"	"	A8	Rock dial and adjust for maximum output. Recheck A5, A6, and A7 at 1400KC
400 ohms	"	6.5MC	Police	Variable fully open.	"	A9	Adjust for maximum output
400 ohms	"	6.0MC	"	Tune for maximum output.	"	A10	" " " "
400 ohms	"	18.3MC	Overseas	Variable fully open.	"	A11	" " " "
400 ohms	"	18.0MC	"	Tune for maximum output.	"	A12	Rock dial and adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inverter	6J5	6J5	6Q	
6	Power Output	6K6GT/G	6K6GT/G	7S	
7	Power Output	6K6GT/G	6K6GT/G	7S	
8	Power Output	6K6GT/G	6K6GT/G	7S	
9	Power Output	6K6GT/G	6K6GT/G	7S	
10	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	20	400	U-134999	FP339	DY-2x20-400/20-25	EL-322	AF44J	UP6BJ38	■ Filter
B	20	300							"
C	20	25					PRS25-25	BR202A	"
12	.01	400	W-30805	TP421	S-4-01	TC-11	484-01	DT4S1	Line Bypass
13	.0033	600	38001-10	TP406	S-6-003	TC-23	684-003	DT6D3	6K6 Plate Bypass
14	.0033	600	38001-10	TP406	S-6-003	TC-23	684-003	DT6D3	" " "
15	.022	400	39001-39	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
16	.022	400	39001-39	TP423	S-4-02	TC-12	484-02	DT4S2	" "
17	.022	400	39001-39	TP423	S-4-02	TC-12	484-02	DT4S2	" "
18	.0075	600	39001-12	TP450	S-6-01	TC-11	684-01	DT6S1	" "
19	.01	600	39001-13	TP410	S-6-01	TC-11	684-01	DT6S1	" "
20	.05	200	39001-65	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
21	.022	400	39001-39	TP423	S-4-02	TC-12	484-02	DT4S2	IF Plate Filter
22	.05	400	39001-41	TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
23	.005	600	39001-11	TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
24	.005	600	39001-11	TP408	S-6-005	TC-25	684-005	DT6D5	" "
25	.0033	600	39001-10	TP406	S-6-003	TC-23	684-003	DT6D3	" "
26	.0033	600	39001-10	TP406	S-6-003	TC-23	684-003	DT6D3	" "
27	.0033	600	39001-10	TP406	S-6-003	TC-23	684-003	DT6D3	" "
28	250	500	39001-73	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
29	100	500	39004-7	MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
30	3300	500	GC210685168						Fixed Padder
31	680	500	G13150220						" "
32	8200	300	GC210685171						" "
33	250	500	39001-73	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
34	75	500	B226638-54	MC230		1FM-475	1468-00075	5W5Q7	" "
35	50	500	B226638-53	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Ant. Pri. Shunt

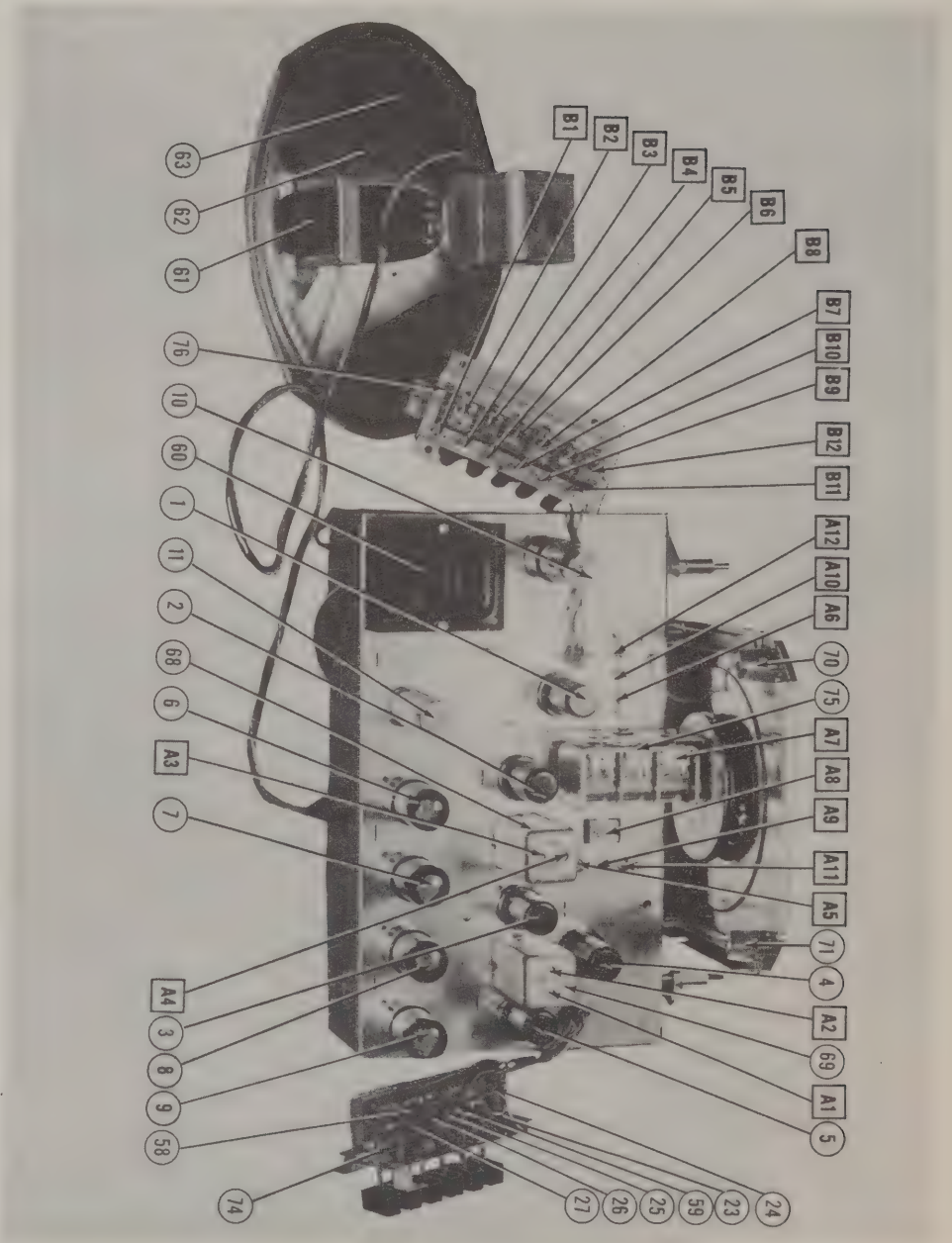
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
36	2.5 Meg.	1	B132299-3A				Volume Control & Switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
37	2.2 Meg.	½	39281-33	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
38	1 Meg. Ω	½	39281-31	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
39	4000Ω	3	W-132458	AB-4000	Yl.-Blk.-Red Screen Dropping
40	4700Ω	2	39016-33	BT-2-4700	Yl.-Vi.-Red Screen Bleeder
41	470Ω	½	39281-11	BTS-470	Yl.-Vi.-Br. RF Plate Load Assembly
42	100Ω	½	39281-7	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
43	47KΩ	½	39281-23	BTS-47K	Yl.-Vi.-Or. Osc. Grid
44	2.2 Meg.	½	39281-33	BTS-2.2 Meg.	Red-Red-Grn. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	
45	470KΩ	½	39281-29	BTS-470K	Yl.-Vi.-Yl. Diode Load
46	2200Ω	½	39281-15	BTS-2200	Red-Red-Red IF Plate Filter
47	10 Meg.	½	39281-37	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
48	330KΩ	½	39281-28	BTS-330K	Or.-Or.-Yl. 1st AF Plate Load
49	47KΩ	½	39281-23	BTS-47K	Yl.-Vi.-Or. Inverter Plate Load
50	1 Meg.	½	39281-31	BTS-1 Meg.	Br.-Blk.-Grn. Inverter Grid
51	3300Ω	½	39281-16	BTS-3300	Or.-Or.-Red Inverter Cathode
52	33KΩ	½	39281-22	BTS-33K	Or.-Or.-Or. Inverter Cathode
53	330KΩ	½	39281-28	BTS-330K	Or.-Or.-Yl. Output Grid
54	330KΩ	½	39281-28	BTS-330K	Or.-Or.-Yl. Output Grid
55	330Ω	2	39244-19	BW-2-330	Or.-Or.-Br. Output Cathodes
56	1 Meg.	½	39281-31	BTS-1 Meg.	Br.-Blk.-Grn. Volume Control Shunt
57	68KΩ	½	39281-24	BTS-68K	Blue-Gray-Or. Tone Compensation
58	250KΩ	½	39281-27	BTS-220K	Red-Grn.-Yl. Tone Compensation
59	250KΩ	½	39281-27	BTS-220K	Red-Grn.-Yl. Tone Compensation

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	CROSLEY PART No.	STANCOR PART No.	THORDARSON PART No.	
60	117VAC @ .840A	640VCT @ .100A	5.2VAC @ 1.9A	6.8VAC @ 3.5A	B-135018	P-8013*	T-22R04	*Use universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
61	14000Ω	5Ω	400Ω	.25Ω	Part of GC-131880-7	A-3870	T-22S88		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.		ST-469		
62	2150Ω	5Ω	GC-131880-7	Mod. G12RS		
	CONE DIA.	VC DIA.				
63	11-3/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

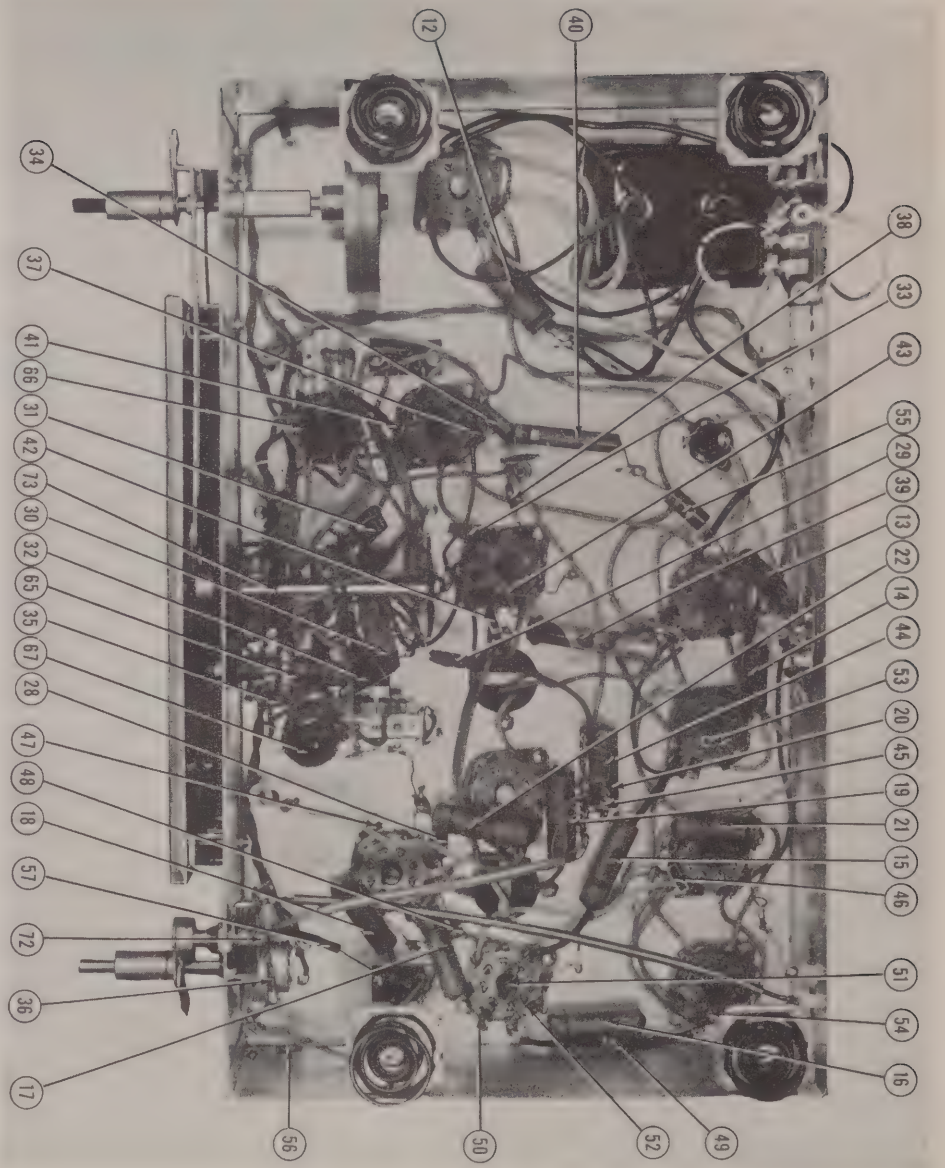
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	
64	Loop Ant.	0Ω		AC135157		
65	LoopLoad. Coil	64Ω	2Ω	AW135028		
66A	BC RF Coil	21.3Ω	4.5Ω	AW135031		Items 66A, 66B, 66C all wound on same form
B	Police Ant. Coil	.5Ω	2Ω	AW135031		
C	SW Ant.Coil	0Ω	0Ω	AW135031		
67A	BC Osc.Coil		6Ω	AW135033		Items 67A, 67B, 67C all wound on same form
B	Police Osc. Coil		.8Ω	AW135033		
C	SW Osc.Coil		.3Ω	AW135033		
68	Input IF	23Ω	19Ω	AW135024	16-6658	
69	Output IF	18.5Ω		AW134066	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CROSLEY PART No.		
70	Bayonet	6-8	0.2	White	W43567		Type 51
71	"	6-8	0.2	"	W43567		" "

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

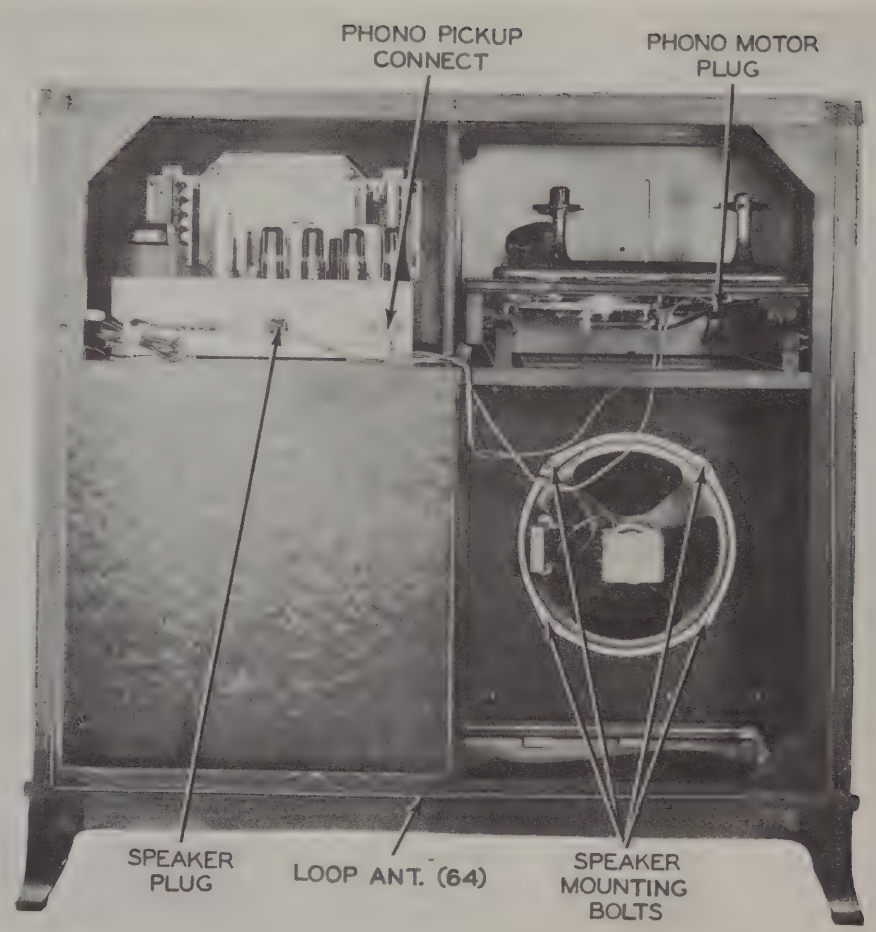
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
72	Switch	B-135049	Radio-Phono
73	Switch	B-134054	Band Switch
74	PB Tone Control	AW-134088	Complete Unit
75	Tuning Cap.	B-135036	3 Gang Variable Cap.
76	Push Button Unit	AW-134087	Station Selector
A5	Trimmer Cap.	B-132386-5	BC Osc. Adj.
A9			Police Osc. Adj.
A11			Overseas Osc. Adj.
A6	Trimmer Cap.	B-132386-5	BC RF Adj.
A10			Police Ant. Adj.
A12			Overseas Ant. Adj.
A8	Padder	W-49652-3	BC Osc. Adj.
	Switch & Brkt.	AW-135072†	PB Tone Control
	" "	AW-132427‡	PB Station Selector
	Face	AW-135042	Dial Assembly
	Dial Pointer	B-134572	
	Cabinet	R-135022	
	Glass & Escutch.	AD-134762	Dial
	Knob	W-134074-3	(Large Type)
	Knob	W-134951	(Small Type)

†Part of Item 74
‡Part of Item 76

DISASSEMBLY INSTRUCTIONS

1. Remove the following push-on type control knobs. Volume control, radio-phono, tuning and band switch.
2. Disconnect the two antenna loop leads from back of chassis.
3. Disconnect phono-pickup leads from terminal strip on back of chassis.
4. Disconnect speaker plug from back of chassis.
5. Disconnect phono-motor receptacle from plug.
6. Remove four long bolts and springs from cabinet board holding chassis to cabinet.
7. Disconnect automatic push button plug from top of chassis.
8. Disconnect automatic tone control push button plug from top of chassis.
9. Remove chassis.
10. Remove the six tinnerman nuts holding the two push button assemblies to cabinet. Remove the push button assemblies.
11. Remove four hex nuts, lock washer and spacers from speaker. Remove speaker.



NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN STANDARD BROADCAST POSITION. TONE PUSH BUTTON IN NO. 1 BASS POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.65V.DC	0V.	77V.DC	6.6V.AC	182V.DC
2	6SA7	0V.	0V.	182V.DC	77V.DC	-3V.DC	0V.	6.6V.AC	-.2V.DC
3	6SK7	0V.	0V.	0V.	-.65V.DC	0V.	77V.DC	6.6V.AC	165V.DC
4	6SQ7	0V.	-.5V.DC	0V.	0V.	-.3V.DC	87V.DC	6.6 V.AC	0V.
5	6J5	0V.	0V.	134V.DC	34V.DC	20V.DC	182V.DC	6.6V.AC	38V.DC
6	6K6GT	0V.	0V.	305V.DC	182V.DC	0V.	0V.	6.6V.AC	17V.AC
7	6K6GT	0V.	0V.	305V.DC	182V.DC	0V.	0V.	6.6V.AC	17V.AC
8	6K6GT	0V.	0V.	310V.DC	182V.DC	0V.	165V.DC	6.6 V.AC	17V.AC
9	6K6GT	0V.	0V.	310V.DC	182V.DC	0V.	0V.	6.6V.DC	17 V.AC
10	5Y3GT	0V.	315V.DC	0V.	320V.AC	0V.	320V.AC	0V.	315V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	4.5MEG.	0Ω	4.3KΩ	.1Ω	8.5KΩ
2	6SA7	0Ω	0Ω	8.5KΩ	4.3KΩ	45KΩ	75Ω	.1Ω	4MEG.
3	6SK7	0Ω	0Ω	0Ω	3MEG.	0Ω	4.3KΩ	.1Ω	10 KΩ
4	6SQ7	0Ω	8MEG.	0Ω	0Ω	480KΩ	340KΩ	.1Ω	0Ω
5	6J5	0Ω	0Ω	57KΩ	29KΩ	940KΩ	8.5KΩ	.1Ω	32KΩ
6	6K6GT	0Ω	0Ω	11KΩ	8.5KΩ	360KΩ	INF.	.1Ω	305Ω
7	6K6GT	0Ω	0Ω	11KΩ	8.5KΩ	360KΩ	INF.	.1Ω	305Ω
8	6K6GT	0Ω	0Ω	11KΩ	8.5KΩ	320KΩ	10KΩ	.1Ω	305Ω
9	6K6GT	0Ω	0Ω	11KΩ	8.5KΩ	320KΩ	INF.	.1Ω	305Ω
10	5Y3GT	INF.	105KΩ	INF.	110Ω	INF.	112Ω	INF.	105KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

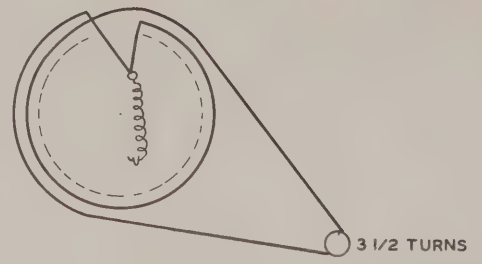
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PUSH BUTTON ADJUSTMENTS

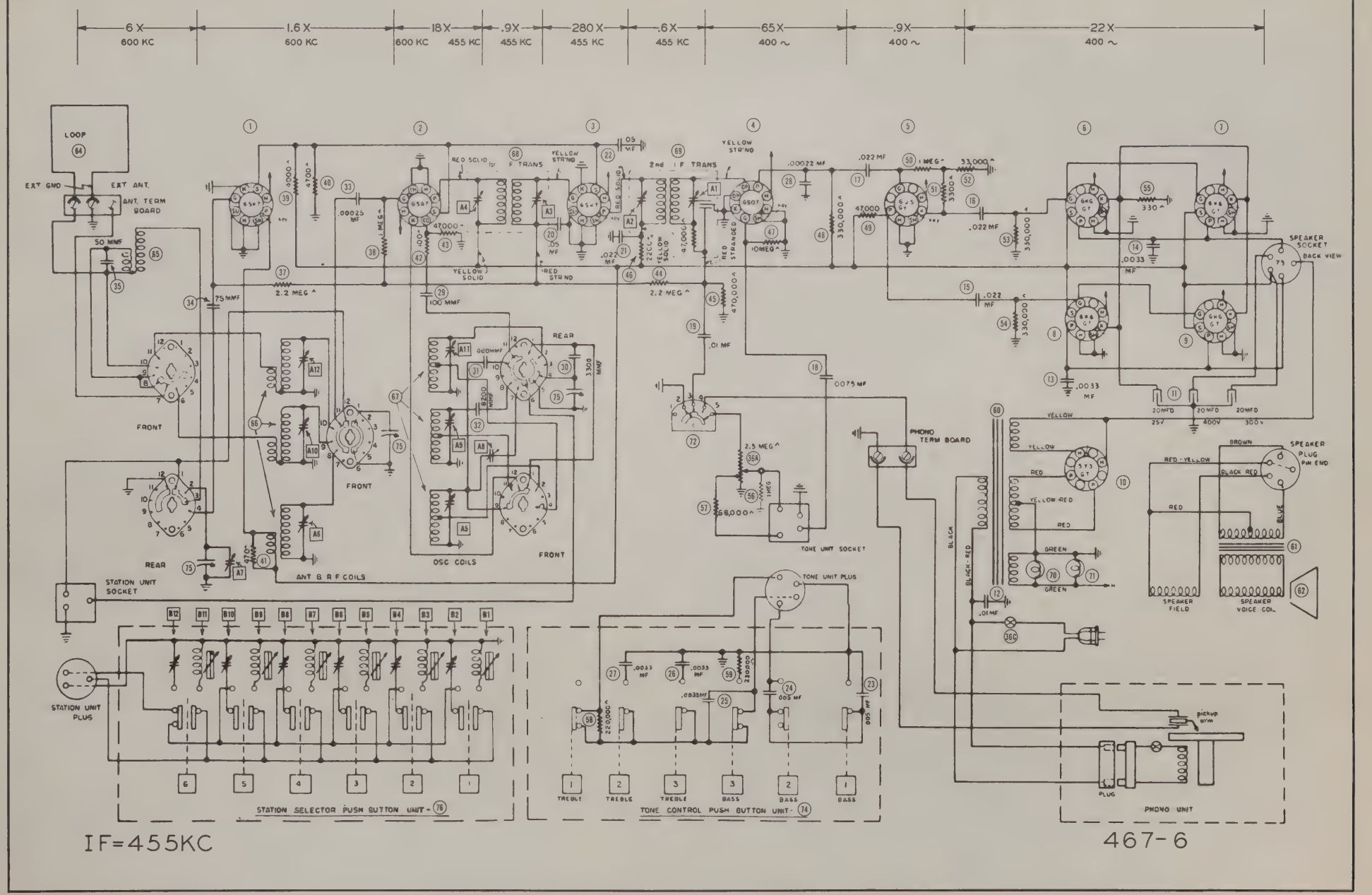
Tuning range of buttons from top to bottom: 540-900KC, 590-1000KC, 680-1150KC, 750-1300KC, 880-1500KC, 1000-1620KC

To set the top button proceed as follows:

1. Turn the Antenna Adjustment screw (B2) clockwise until moderately tight, then turn the Oscillator Adjustment screw (B1) counter-clockwise until the threaded portion extends approximately 3/4 inch. Use a small screwdriver and do not exert pressure.
2. Turn the band switch to "American" position and manually tune in the station to which the push button is to be set. The frequency of the station must be between 540 and 900KC. Carefully adjust tuning control to the point of clearest reception.
3. Turn the band switch to the "Automatic" position and slowly turn B1 clockwise until the same station is heard. Adjust the screw for maximum volume.
4. Adjust B2 for maximum volume.
5. Turn the band switch from "Automatic" to "American" and back again to check if the adjustment has been correctly made. There should be no change in tone quality when switched from one to the other.
6. Place the tab with the call letters of the station to which the push button has been set in a celluloid "V" and slide it into the button from the side.
7. Set remaining buttons in a similar manner adjusting B3, B5, B7, B9 and B11 to tune in the station and B4, B6, B8, B10 and B12 for maximum volume. Make sure the frequency of the desired station is within the range of the button being set up.



DIAL CORD DRIVE



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

DELCO
MODELS R-1234, R-1235

DELCO
MODELS R-1234, R-1235

DELCO MODELS R-1235

TRADE NAME	Delco Models R-1234, R-1235
MANUFACTURER	Delco Radio, Div. of G. M. Corp., Kokomo, Ind.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7GT Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105 - 125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720 KC. RATING .255 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.02 MFD.	High side to pin #8 (grid) of 12SA7. Low side to B-.	456 KC.	Quiet point near high freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy to .001 MFD. to reduce hum modulation.
200 MMF.	High side to ant. lead. Low side to B-.	1720 KC.	High freq. end of dial. (Variable fully open).	"	A5	"
"	"	1400KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		DELCO PART No.	STANDARD REPLACEMENT		
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DELCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	40	150	1217026	2N511	M-2x40-150	TA-440	PRSA150-40-40	BRL4415	Filter - Red
B	40	150							" - Blue
8	.05	600	7230582	TP415	S-6-05	TC-15	684-05	DT6S5	Rect. Bypass
9	.02	600	1207902	TP412	S-6-02	TC-12	684-02	DT6S2	35L6 Plate Bypass
10	.005	600	7230912	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.001	600	7239188	TP404	S-6-001	TC-21	684-001	DT6D1	" "
12	.01	600	7233608	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Compensation
13	.1	200	7238789	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.05	600	7230592	TP415	S-6-05	TC-15	684-05	DT6S5	Ant. Coupling
15	.2	400	7238787	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
16	.002	600	7237954	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Compensation
17	470	500	7238879	MC245	MO.5-35	MS-35	1468-0005	5W5T5	Audio Plate Bypass
18	150	500	7230893	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	RF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19A	500KΩ	1	1216505	TM233	D13-133X	T78	Volume Control
B	Shaft		Not Req.	SS-1	A	Not Req.	Attach to 19A per instructions.
C	Switch		" "	M26	41	SW-A	" " " " "

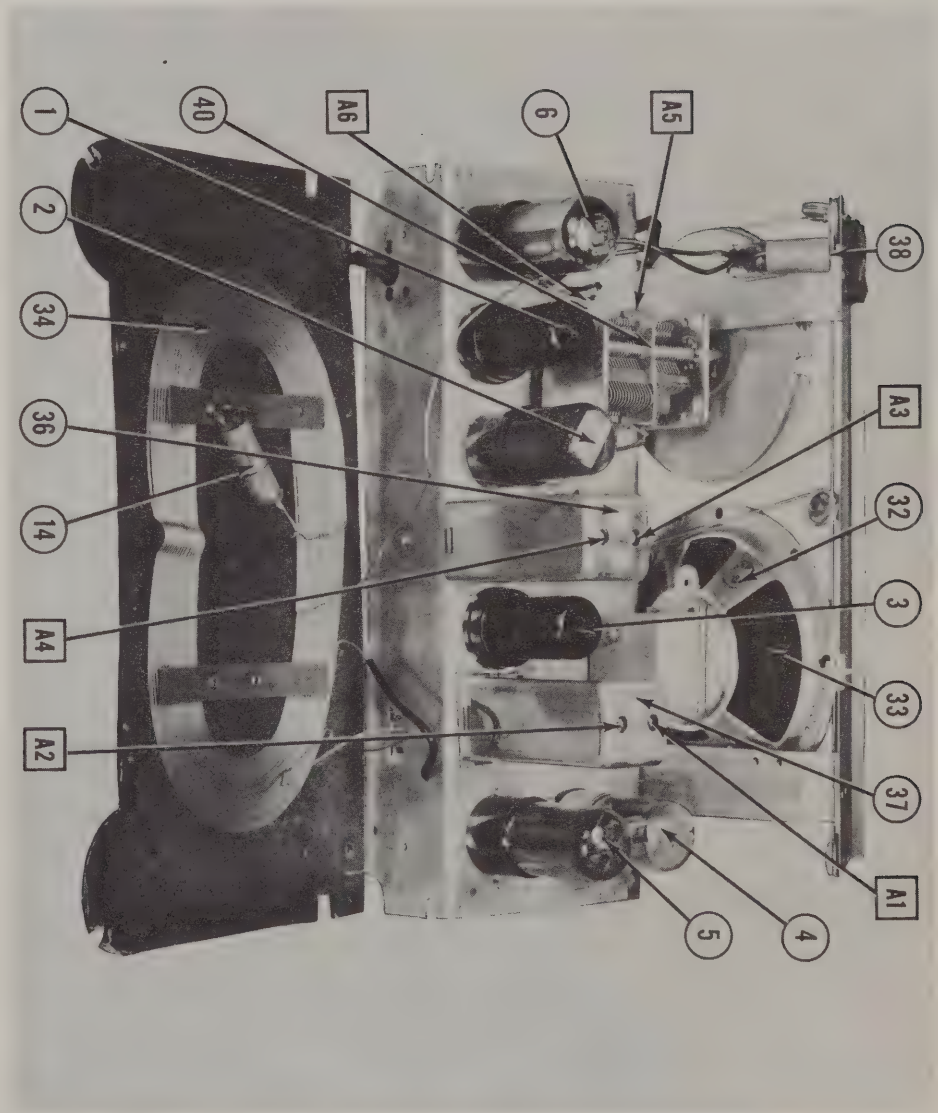
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DELCO PART No.	IRC PART No.	
20	3900Ω	½	1214546	BTS-3900	Or.-White-Red RF Plate Load
21	47KΩ	½	1214553	BTS-47K	Yl.-Vi.-Or. Converter Grid
22	22KΩ	½	1214550	BTS-22K	Red-Red-Or. Osc. Grid
23	3.3 Meg.	½	1214564	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	56KΩ	½	1213267	BTS-56K	Grn.-Blue-Or. Tone Compensation
25	10 Meg.	½	1215548	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
26	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. 1st AF Plate Load
27	470KΩ	½	1214559	BTS-470K	Yl.-Vi.-Yl. Output Grid
28	150Ω	½	1213220	BW-½-150	Br.-Grn.-Br. Output Cathode
29	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. Line Isolating
30	1000Ω	1	1211037	BTA-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DELCO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
31	3000Ω	3.2Ω	210Ω	.85Ω	1216557	A-3876*	T-22545*		*Bend mounting tabs down, insert through slots and twist.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA DELCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105†		†Fabricate new mounting bracket.
32	PM	3.3Ω	1216563	Mod. P5-X		
	CONE DIA.	VC DIA.				
33	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

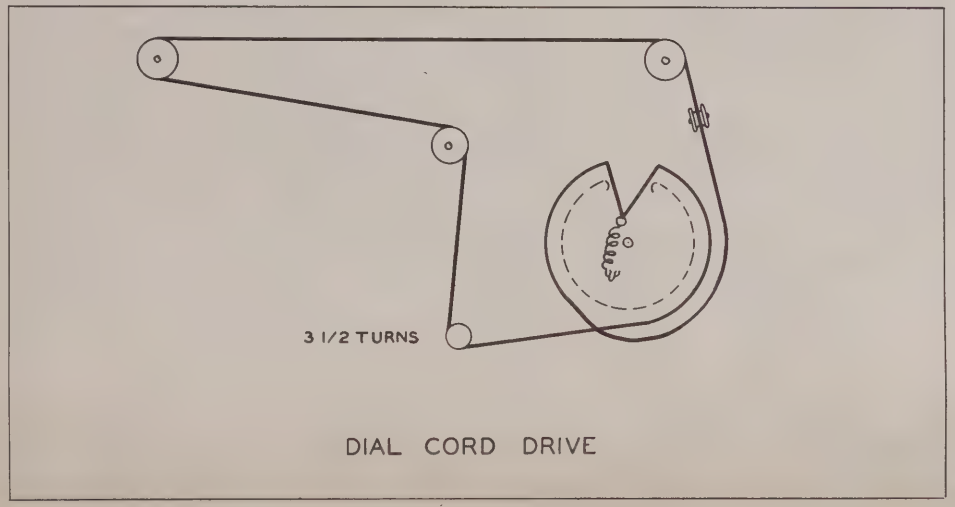
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DELCO PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
34	Loop Ant.	0Ω	1.5Ω	1216621		
35	Osc. Coil	1Ω	6Ω	1216915	14-1040‡	‡ Add 50 MMFD from grid to high side tuning cap.
36	Input IF	18Ω	18Ω	1216605	16-6658	
37	Output IF	18.5Ω		1216570	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DELCO PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown	435433		Type 47

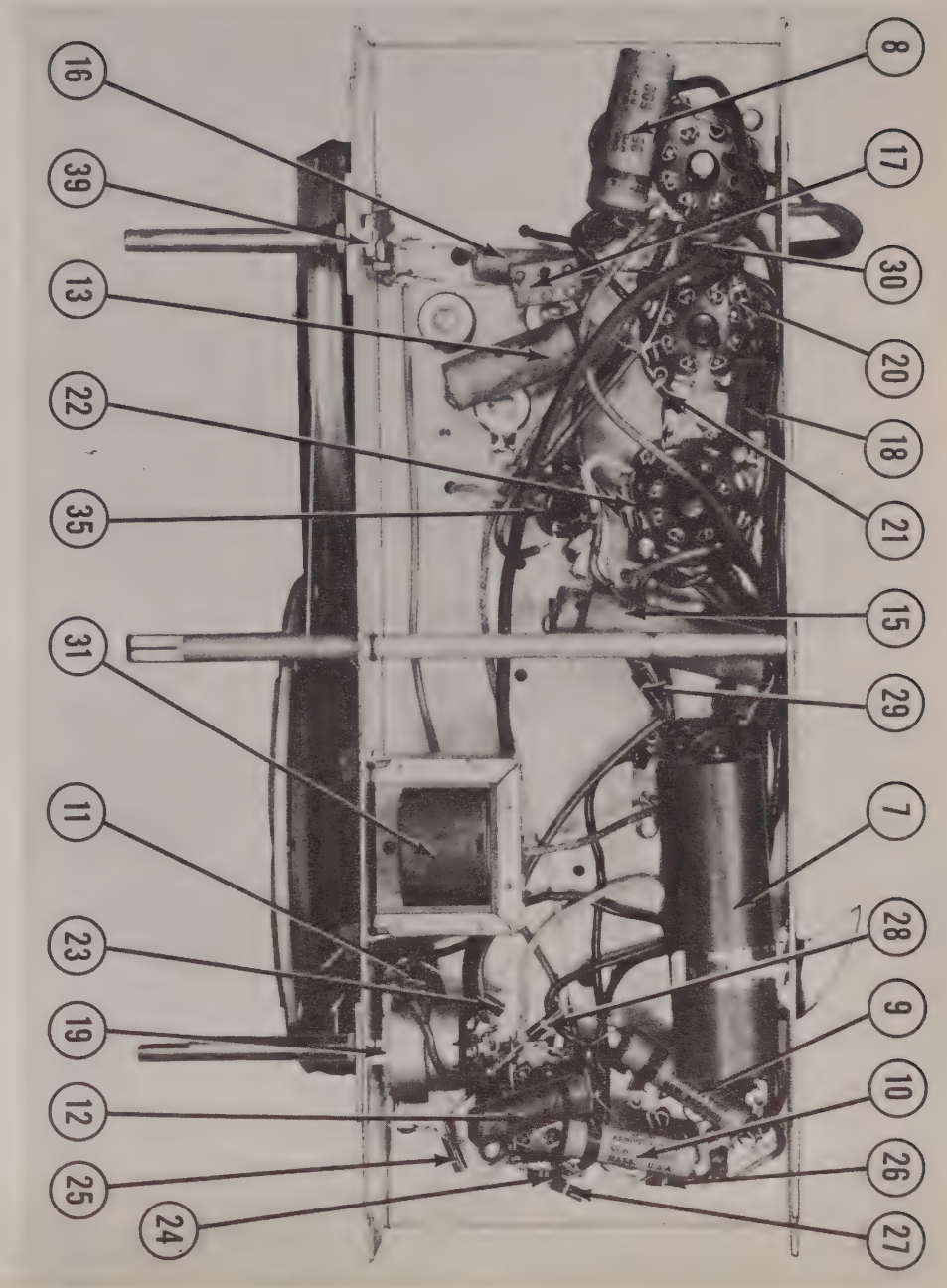
MISCELLANEOUS

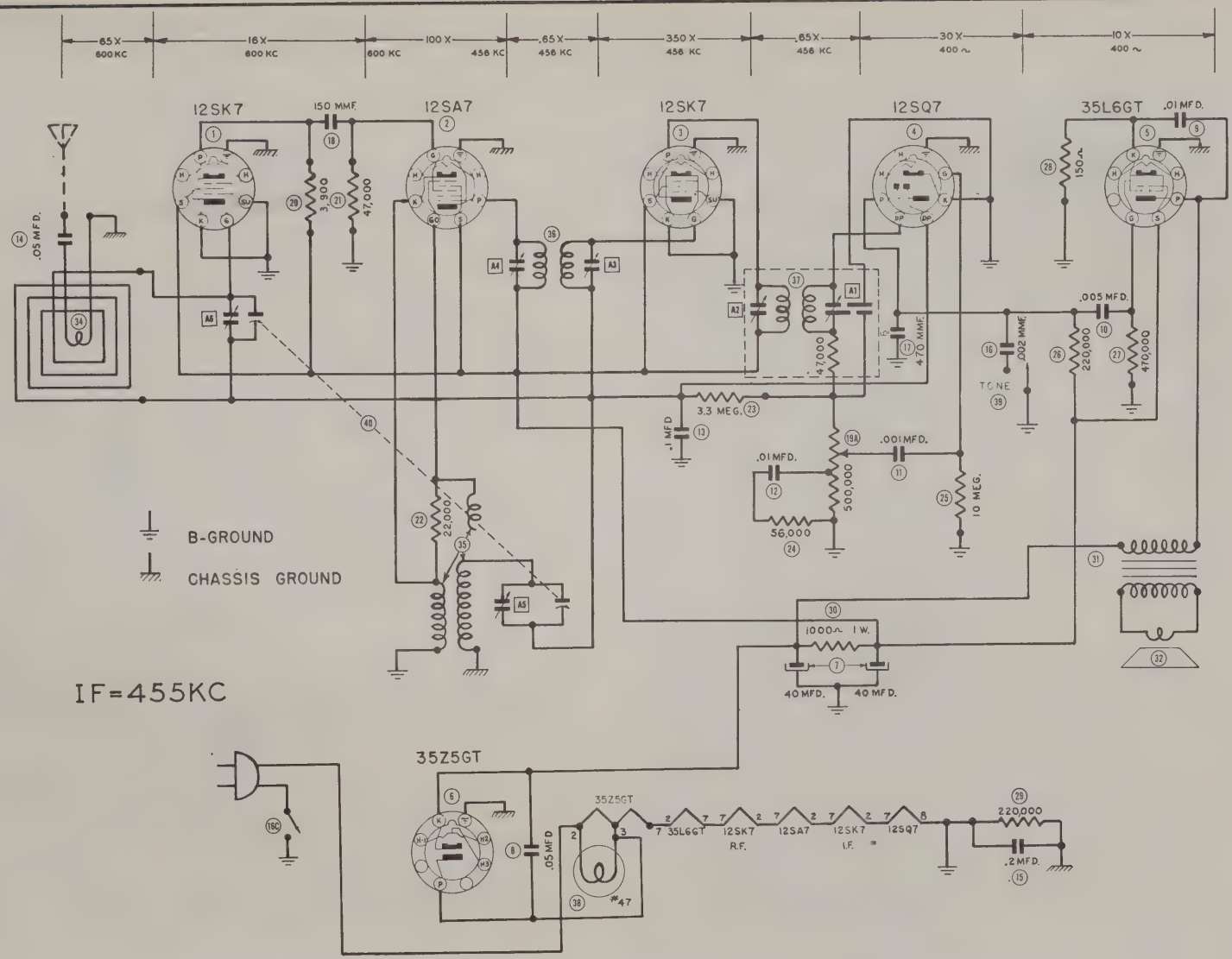
ITEM No.	PART NAME	DELCO PART No.	NOTES
39	Tone Switch	1216544	
40	Tuning Cap.	1216548	2 Gang Variable Cap.
	Indicator	1216562	Dial Pointer
	Cabinet	1216463	Walnut Plastic R-1235
	"	1216592	Ivory Plastic R-1234
	Dial	1216608	Glass Calibrated
	Knob	1216874	Tone, Drive & Vol. R-1235
	"	1216878	" " " R-1234



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	-.05VDC	36.8VAC	0V.	-.25VDC	0V.	82VDC	47.5VAC	43VDC
2	12SA7GT	-.05VDC	24.5VAC	82VDC	82VDC	-.25VDC	0V.	36.8VAC	0V.
3	12SK7	-.05VDC	12.5VAC	0V.	-.25VDC	0V.	82VDC	24.5VAC	82VDC
4	12SQ7GT	-.05VDC	-.35VDC	0V.	-.25VDC	-.35VDC	62VDC	12.5VAC	0V.
5	35L6GT	-.05VDC	87 VAC	112 VDC	82 VDC	0V.	0V.	47.5VAC	4.9VDC
6	35Z5GT	-.05VDC	117 VAC	113 VAC	0V.	113VAC	0V.	87 VAC	118 VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	245 KΩ	33 Ω	0 Ω	3.2 MEG	0 Ω	85 KΩ	44 Ω	89 KΩ
2	12SA7GT	245 KΩ	22 Ω	85 KΩ	85 KΩ	21.5 KΩ	.5 Ω	33 Ω	40 KΩ
3	12SK7	245 KΩ	12 Ω	0 Ω	3.2 MEG	0 Ω	85 KΩ	22 Ω	85 KΩ
4	12SQ7GT	245 KΩ	8 MEG	0 Ω	3.2 MEG	430 KΩ	305 KΩ	12 Ω	0 Ω
5	35L6GT	245 KΩ	75 Ω	85 KΩ	85 KΩ	370 KΩ	54 KΩ	44 Ω	130 Ω
6	35Z5GT	245 KΩ	100 Ω	97 Ω	INF.	97 Ω	INF.	75 Ω	85 KΩ

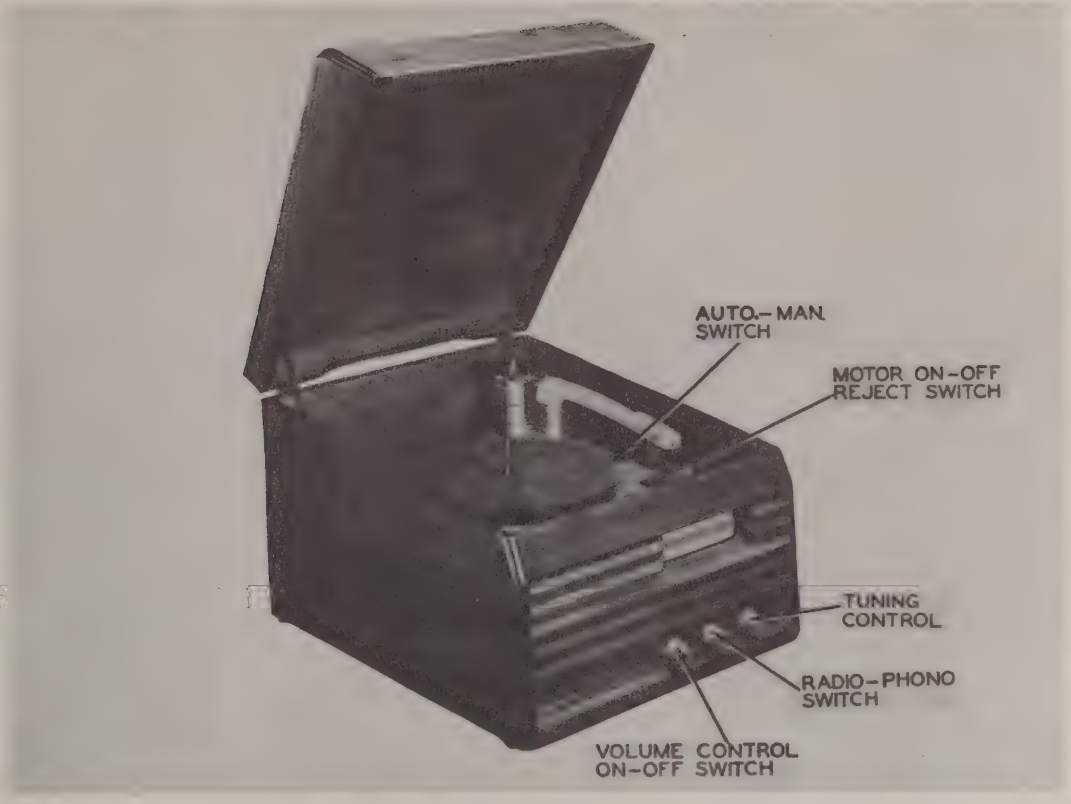
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DETROLA
MODEL 558-1-49A



DETROLA
MODEL 558-1-49A

DETROLA MODEL 558-1-49A

TRADE NAME	Detrola Model 558-1-49A
MANUFACTURER	International Detrola Corp., 1501 Beard St., Detroit, Mich.
TYPE SET	AC Operated Combination Automatic Phono. - Superheterodyne Receiver, Self Contained Loop Antenna.
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .270 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at last reference mark at left end of dial. I. F. and Oscillator adjustments may be made with the loop disconnected providing a 10K to 50K resistor is substituted for the loop. A6 must be adjusted with chassis and loop mounted in cabinet or loop and chassis must be in same relative position as they are when mounted in cabinet. Use isolation transformer if available. If not, connect capacitor in series with the low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 of 12SA7. Low side to B-.	455KC	High freq. end. (Variable fully open)	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
	Loop	1620KC	"	"	A5	Connect output of signalgenerator to two turns of wire approx. 12 inches in diameter and radiate signal into receiver loop. Adjust for maximum.
	"	1400KC	Tune for maximum output.	"	A6	Install in cabinet. Radiate signal into receiver loop. A6 is accessible through bottom of cabinet. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: DETROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DETROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	A-8948	FP306*	DY-40+20-150	EL-24	AF84D20A*		■ Filter
B	20	150							▲ "
7	.05	400	BC31B503	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400	BD410203	TP423	S-4-02	TC-12	484-02	DT4S2	50L6 Plate Bypass
9	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
10	.02	400	BD410203	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
11	.01	400	BD410103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
12	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Coupling
13	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
14	.05	200	BD210503	TP426	S-4-05	TC-15	484-05	DT4S2	AVC Filter
15	220	500	BM78A221	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
16	100	500	BM78A101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor

*Do not use bypass section

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	B9051-3	MK401	D13-133	AM-50-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	1/3	BR17B223	BTS-22K	Red-Red-Or. Osc. Grid
19	15 Meg.	1/3	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
20	3.3 Meg.	1/3	BR17B335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
21	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. Line Isolating
22	6.8 Meg.	1/3	BR17B685	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
23	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. 1st AF Plate Load
24	100KΩ	1/3	BR17B104	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
25	150Ω	1/2	BR16C151	BW-½-150	Br.-Grn.-Br. Output Cathode
26	470KΩ	1/3	BR17B474	BTS-470K	Yl.-Vi.-Yl. Output Grid

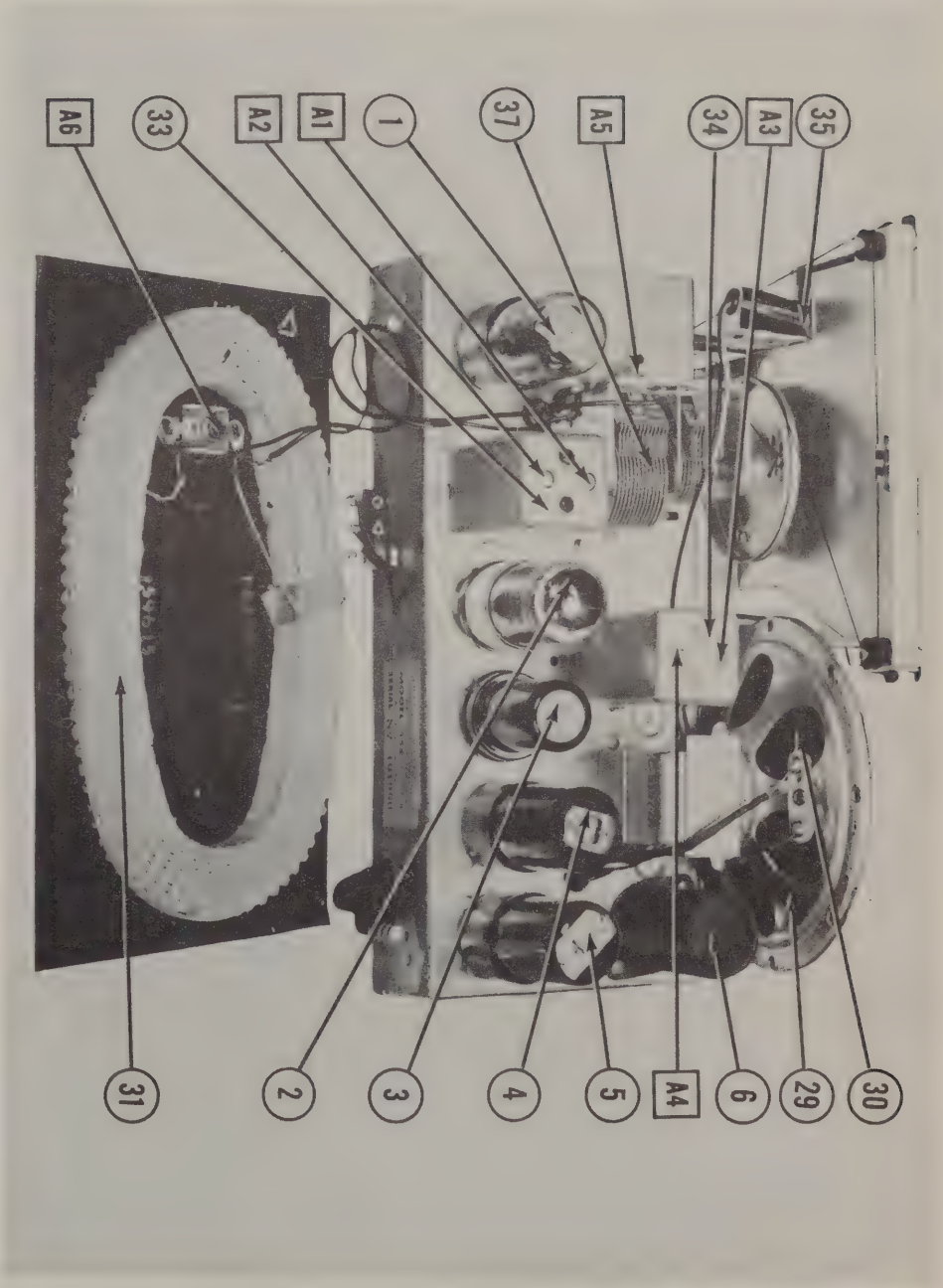
FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: DETROLA PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
27	73MA	100Ω	2 Henries	A-51726-2	C-1355		

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DETROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
28	2300Ω	3.4Ω	215Ω	.75Ω	B-51578-1	A-3876	T-22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DETROLA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
29	PM	3.4Ω	C-51577	Mod. P5-V		
	CONE DIA.	VC DIA.				
30	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

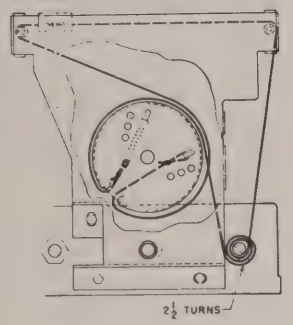
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	DETROLA PART No.	MEISSNER PART No.	
31	Loop Ant.		1Ω	B51599		
32	Osc. Coil	1Ω	6Ω	B51159	14-1040	
33	Input IF	29Ω	22Ω	B51010-1	16-6658	
34	Output IF	34Ω		B51011-1	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DETROLA PART No.		
35	Bayonet	6-8	.15	Brown	A-6158		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	DETROLA PART No.	NOTES
36	Switch	B-51576-1	Radio-Phono
37	Tuning Cap.	C-51573-1	2 Gang Variable Cap.
A6	Trimmer Cap.	B-8296-1	Ant. Adjustment

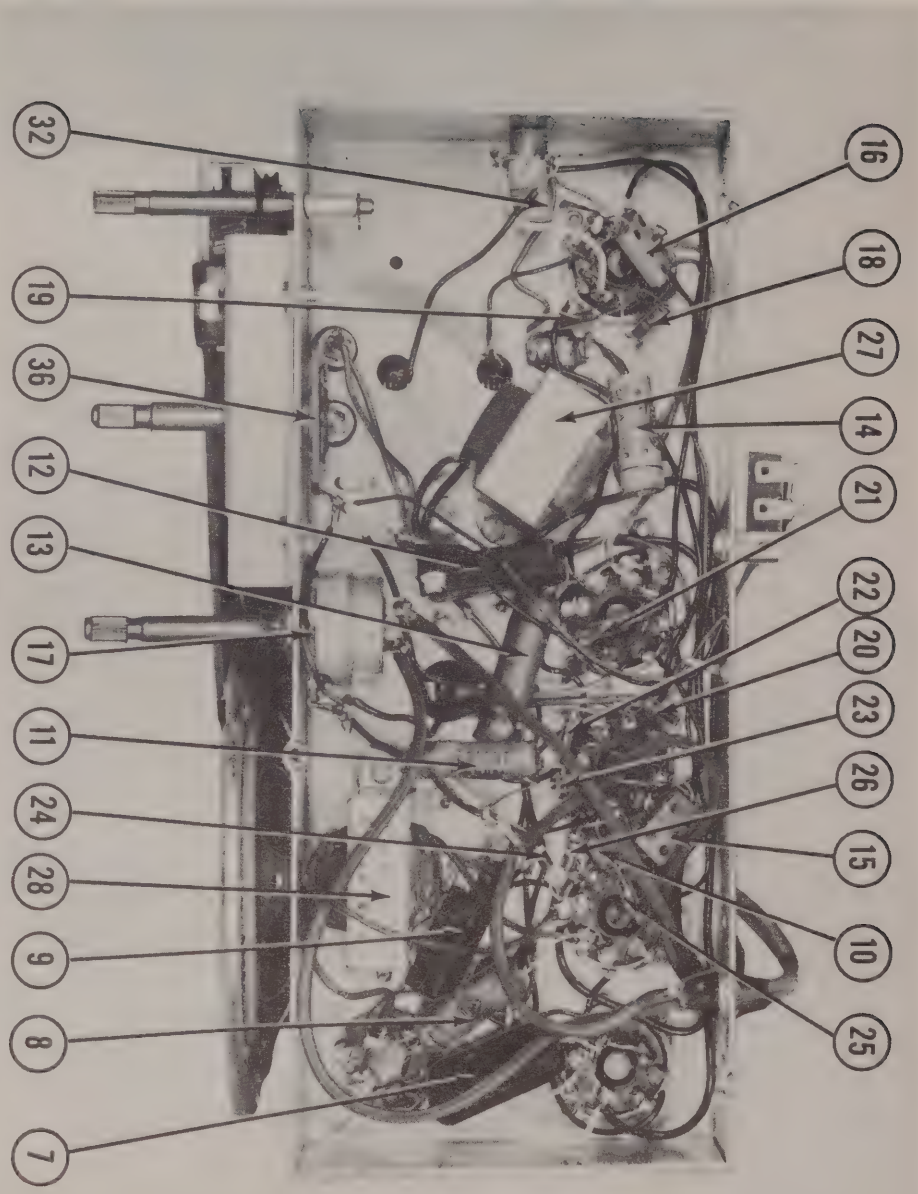


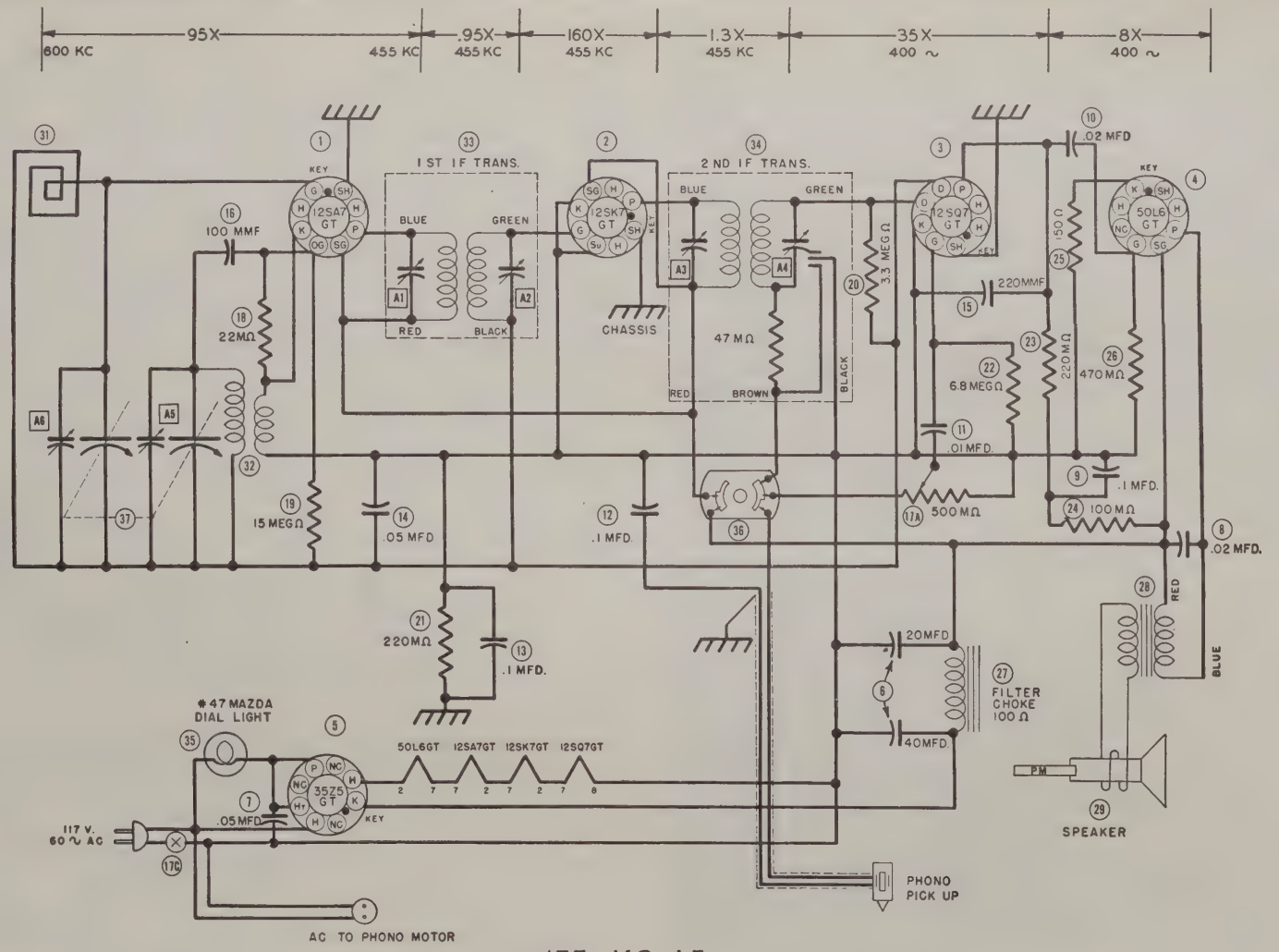
Dial Mechanism

DISASSEMBLY INSTRUCTIONS

1. Remove the three push-on type knobs and felt washers.
2. Remove the two solderless connectors from line cord connections.
3. Disconnect the two line cord leads from the two black leads.
4. Unsolder the two brown pickup leads from terminal strip on chassis.
5. Unsolder black lead from terminal strip.
6. Remove two nuts and washers holding antenna loop to cabinet.
7. Remove four hex head screws from chassis plate, holding chassis to cabinet.
8. Remove three hex head screws and washers holding chassis to chassis plate.
9. Remove chassis and antenna loop from cabinet.

CHASSIS—BOTTOM VIEW





455 KC IF

NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	37.8 V.AC	108 V.DC	108 V.DC	−8 V.DC	0V.	25.5 VAC	−4 V.DC
2	12SK7GT	0V.	25.5 VAC	0V.	−4 V.DC	0V.	108 V.DC	13 V.AC	108 V.DC
3	12SQ7	0V.	−5 V.DC	0V.	−4 V.DC	−35 V.DC	67 V.DC	13 VAC	0V.
4	50L6GT	0V.	88 VAC	100 V.DC	108 V.DC	0V.	0V.	38.7 VAC	66 V.DC
5	35Z5GT	0V.	117 VAC	113 VAC	0V.	113 VAC	0V.	88 VAC	117 V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	250 KΩ	36 Ω	90 KΩ	90 KΩ	25 KΩ	.75 Ω	24 Ω	3.2 MEG.
2	12SK7GT	250 KΩ	24 Ω	0 Ω	3.2 MEG.	0 Ω	90 KΩ	12 Ω	90 KΩ
3	12SQ7	250 KΩ	6 MEG.	0 Ω	3.2 MEG.	540 KΩ	310 KΩ	12 Ω	0 Ω
4	50L6GT	INF.	80 Ω	90 KΩ	90 KΩ	420 KΩ	INF.	36 Ω	140 Ω
5	35Z5GT	INF.	102 Ω	100 Ω	INF.	100 Ω	INF.	80 Ω	90 KΩ

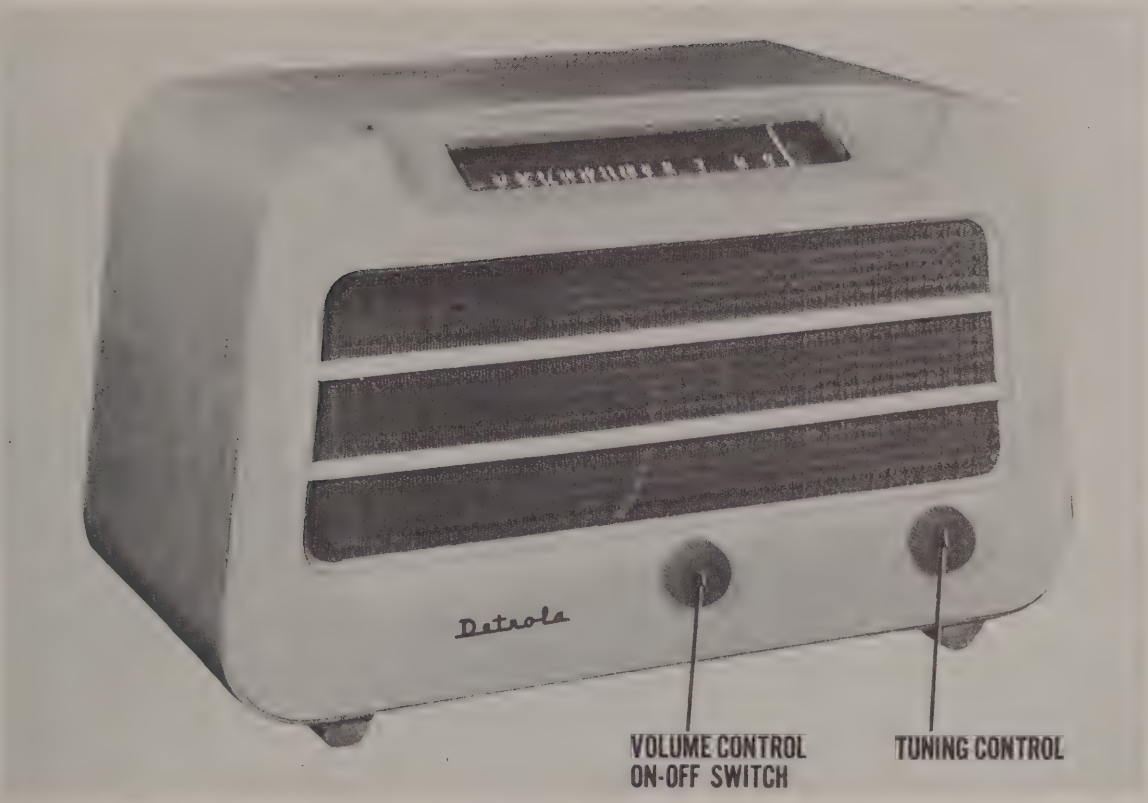
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DETROLA
CHASSIS MODEL 579



DETROLA
CHASSIS MODEL 579

DETROLA CHASSIS MODEL 579-2-58A

TRADE NAME	Detrola Chassis Model 579-2-58A
MANUFACTURER	International Detrola Corp., 1501 Beard St., Detroit, Mich.
TYPE SET	AC - DC Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7GT Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .265 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Set volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin 8 of 12SA7. Low side of B-.	455KC	High freq. end of dial. (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
	Loop	1620KC	"	"	A5	Connect output of signal generator to two turns of wire and radiate signal into receiver loop. Adjust for maximum output.
	"	1400KC	Tune for maximum output.	"	A6,A7.	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: DETROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	6N	
2	Converter	12SA7GT	12SA7GT	6R	
3	If Amp.	12SK7	12SK7	6N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DETROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A-8945	FP306*	DY-40+20-150	EL-24	AF58D	UP4CJ59*	■ Filter
B	20	150							▲ "
8	.05	400	BC31B503	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	BD410203	TP423	S-4-02	TC-12	484-02	DT4S2	35L6 Plate Bypass
10	.02	400	BD410203	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
11	.01	400	BD410103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
12	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
13	.05	200	B2210503	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	220	500	BM78A221	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
15	47	500	BM78A470	MC225	MO.5-45	1FM-45	1468-00035	5W5Q5	Osc. Grid Capacitor
16	150	500	BM78A151	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	RF Pri. Shunt

*Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	A-9051-2	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KS5-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

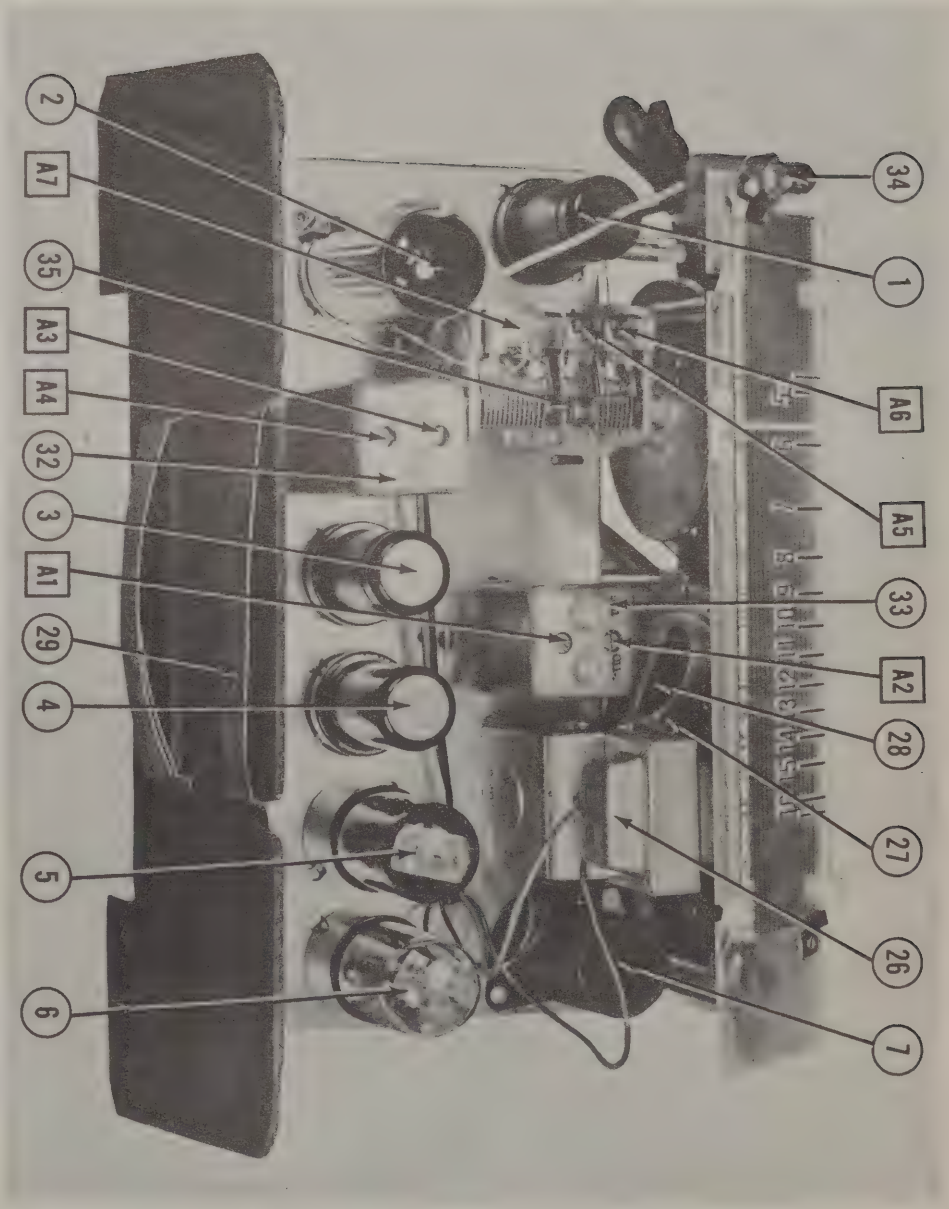
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	IRC PART No.	IDENTIFICATION CODES
18	15 Meg.	½	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
19	22KΩ	½	BR17B223	BTS-22K	Red-Red-Or. Osc. Grid
20	220KΩ	½	BR17B224	BTS-220K	Red-Red-Yl. Line Isolating
21	3.3 Meg.	½	BR17B335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	6.8 Meg.	½	BR17B685	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
23	470KΩ	½	BR17B474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
24	470KΩ	½	BR17B474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	BR18C151	BW-½-150	Br.-Grn.-Br. Output Cathode

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DETROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
26	2250Ω	3.5Ω	230Ω	.65Ω		A-3876†	T-22S45†		†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DETROLA PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.		ST-4501		‡Add 1560Ω 10 watt resistor in
27	350Ω	3.5Ω	C-51056	Mod. H5-S		parallel with field coil.
	CONE DIA.	VC DIA.				
28	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

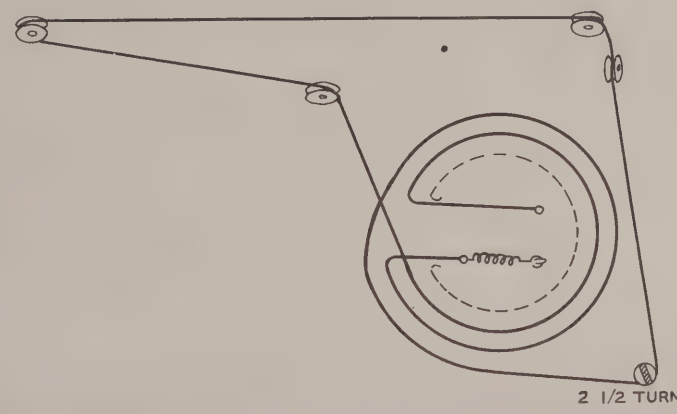
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	DETROLA PART No.	MEISSNER PART No.	
29	Loop Ant.		.6Ω			
30	RF Coil	34Ω	13Ω	B51237	14-1027	
31	Osc. Coil	1Ω	9.3Ω	B51256		
32	Input IF	29Ω	22Ω	B51010-1	16-6658	
33	Output IF	34Ω		B51011-1	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DETROLA PART No.		
34	Bayonet	6-8	0.15	Brown	A-6153		Type 47

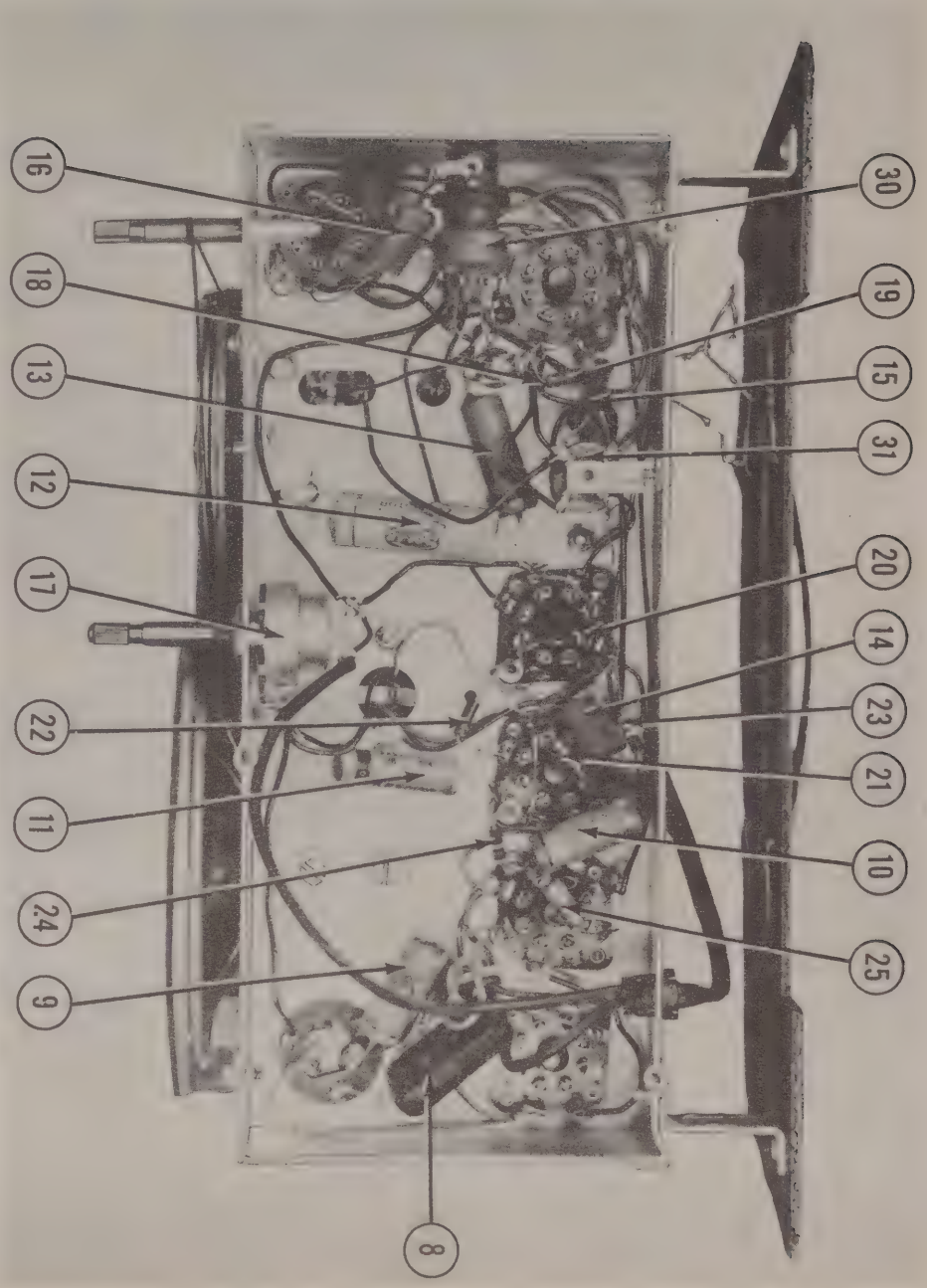
MISCELLANEOUS

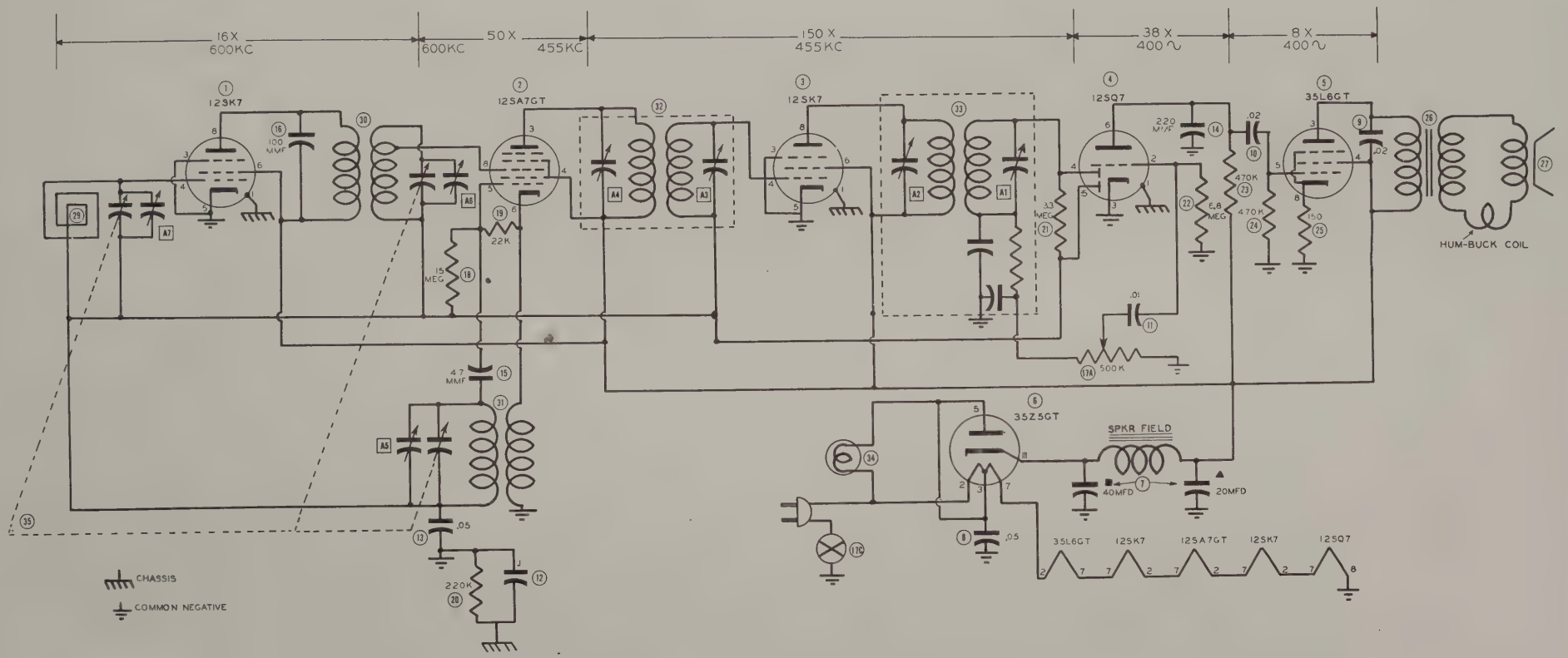
ITEM No.	PART NAME	DETROLA PART No.	NOTES
35	Tuning Cap.	C-51251	3 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	48.2V.AC	0V.	-.4V.DC	0V.	92V.DC	36.8V.AC	92V.DC
2	12SA7	0V.	36.8V.AC	92V.DC	92V.DC	-4.6V.DC	0V.	25V.AC	-4V.DC
3	12SK7	0V.	25V.AC	0V.	-.4V.DC	0V.	92V.DC	12.8V.AC	92V.DC
4	12SQ7	0V.	-.45V.DC	0V.	-.25V.DC	-.4V.DC	50V.DC	12.8V.AC	0V.
5	35L6GT	0V.	86V.AC	86V.DC	92V.DC	0V.	0V.	48.2VAC	5V.DC
6	35Z5GT	0V.	117V.AC	112V.AC	0V.	112V.AC	0V.	86V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	220KΩ	48Ω	0Ω	2.7MEG	0Ω	120KΩ	36Ω	120KΩ
2	12SA7	220KΩ	36Ω	120KΩ	120KΩ	24KΩ	1Ω	24Ω	2.7MEG
3	12SK7	220KΩ	24Ω	0Ω	2.7MEG	0Ω	120KΩ	13Ω	120KΩ
4	12SQ7	220KΩ	8 MEG	0Ω	480KΩ	2.7MEG	590KΩ	13Ω	0Ω
5	35L6GT	INF	82Ω	120KΩ	120KΩ	420KΩ	INF	48Ω	140Ω
6	35Z5GT	INF	115Ω	112Ω	INF	112Ω	INF	82Ω	120KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITATORS

467-9

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ECA
MODEL 106

ECA
MODEL 106

ECA MODEL 106

TRADE NAME	ECA Model 106
MANUFACTURER	Electronic Corp. of America, 170 53rd Street, Brooklyn 32, N.Y.
TYPE SET	AC Operated Combination Automatic Phono. - Superheterodyne Receiver, Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-125 Volts AC
TUNING RANGE—BROADCAST	530-1740KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	High freq. end (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
200 MMF.	High side to ext. ant. lead. Low side to chassis.	1740KC	"	"	A5	Adjust for maximum output.
200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ECA PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amplifier	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ECA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	50	150	S-CE122M	2N520	M-50+30-150	TA-530	PRSA150-40-40	BRD3515	Filter - Red
B	30	150							" - Blue
7	.05	400	CP105E	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400	CP104E	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
9	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Tone Compensation
10	.005	400	CP116E	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
11	.05	400	CP105E	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.2	200	CP133D	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
13	.005	400	CP116E	TP408	S-6-005	TC-25	484-005	DT6D5	Ant. Coupling
14	250	500	CM112E	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
15	250	500	CM112E	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Diode
16	100	500	CM103E	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ECA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	1	S-RV171-1	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
18A	1 Meg.	1	S-RV174-1	MR53	D13-137	M-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 18A per instructions

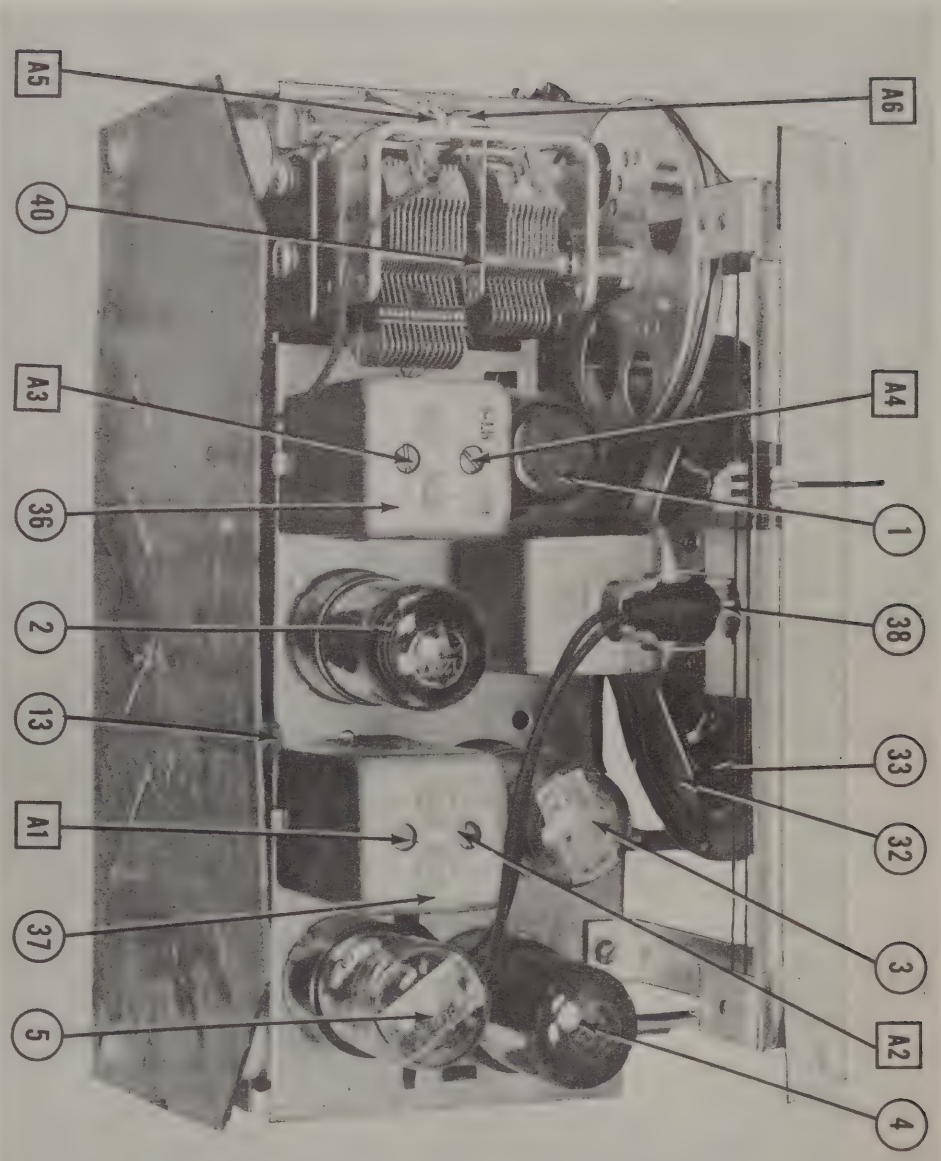
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ECA PART No.	IRC PART No.	
19	27KΩ	½	RS193BA	BTS-27K	Red-Vi.-Or. Osc. Grid
20	27KΩ	½	RS193BA	BTS-27K	Red-Vi.-Or. Line Isolating
21	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	51KΩ	½	RS229BA	BTS-47K	Grn.-Br.-Or. IF Filter
23	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phono Voltage Divider
24	27KΩ	½	RS193BA	BTS-27K	Red-Vi.-Or. Phono Voltage Divider
25	4.7 Meg.	½	RS237B	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
26	220KΩ	½	RS190B	BTS-220K	Red-Red-Yl. 1st AF Plate Load
27	470KΩ	½	RS189BA	BTS-470K	Yl.-Vi.-Yl. Output Grid
28	150Ω	½	RS135CA	BW-½-150	Br.-Grn.-Br. Output Cathode
29	27KΩ	1	RS193DA	BTA-27K	Red-Vi.-Or. Voltage Divider Bias
30	1500Ω	2	RS195EA	BT-2-1500	Br.-Grn.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ECA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
31	2450Ω	3.2Ω	177Ω	1.02Ω	S-TA115	A-3876*	T-22S46*		*Drill one new mounting hole

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ECA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107		
32	PM	3.25Ω	S-QL104	Mod. P5-V		
	CONE DIA.	VC DIA.				
33	4-E/3"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ECA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
34	Loop Ant.	0Ω	2Ω	C-ZQ499		
35	Osc. Coil		6Ω	S-LR120		
36	Input IF	28Ω	28Ω	S-LR121	16-6658	
37	Output IF	29Ω	29Ω	S-LR122	16-6650	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ECA PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown			Type 47

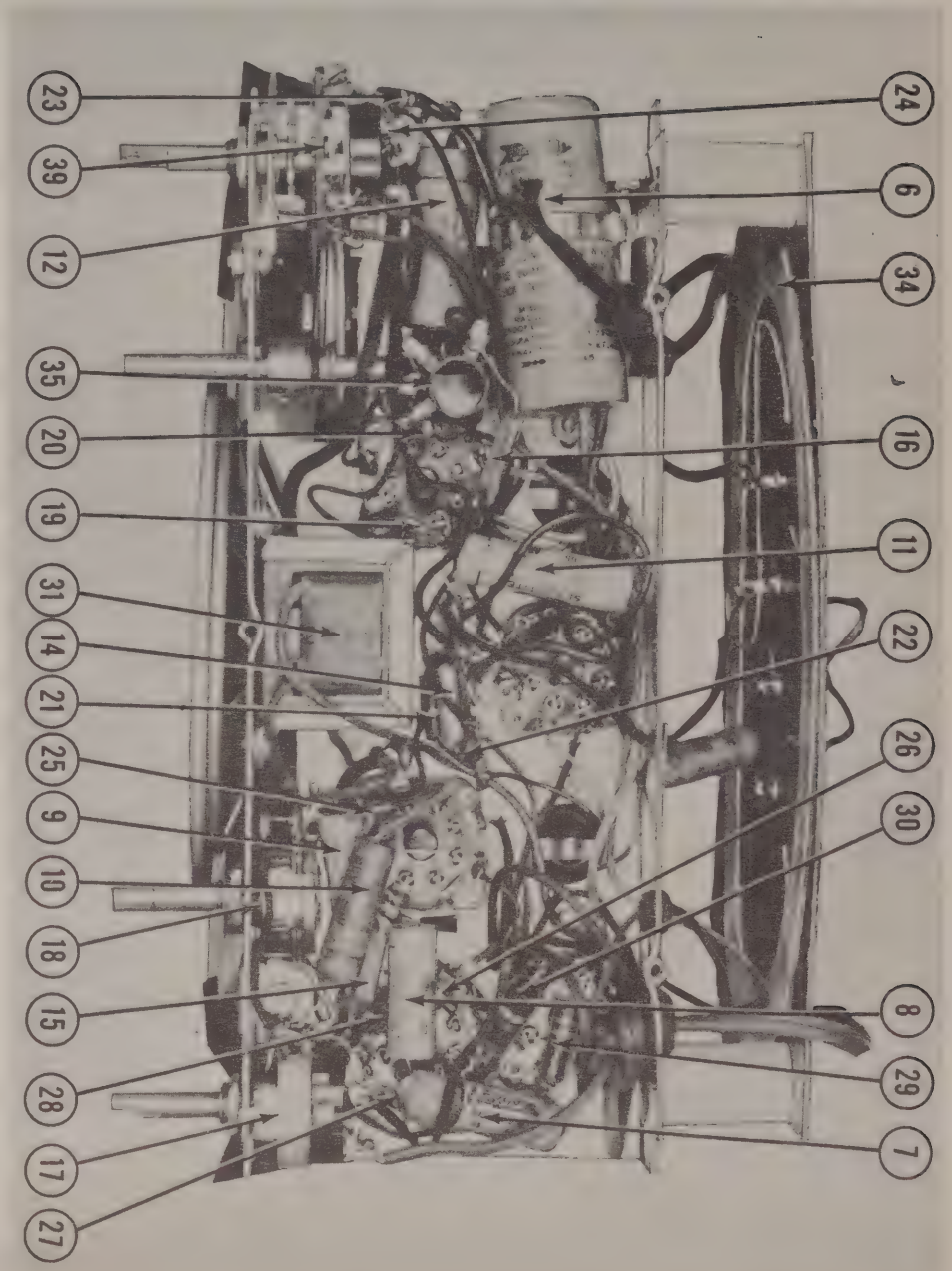
MISCELLANEOUS

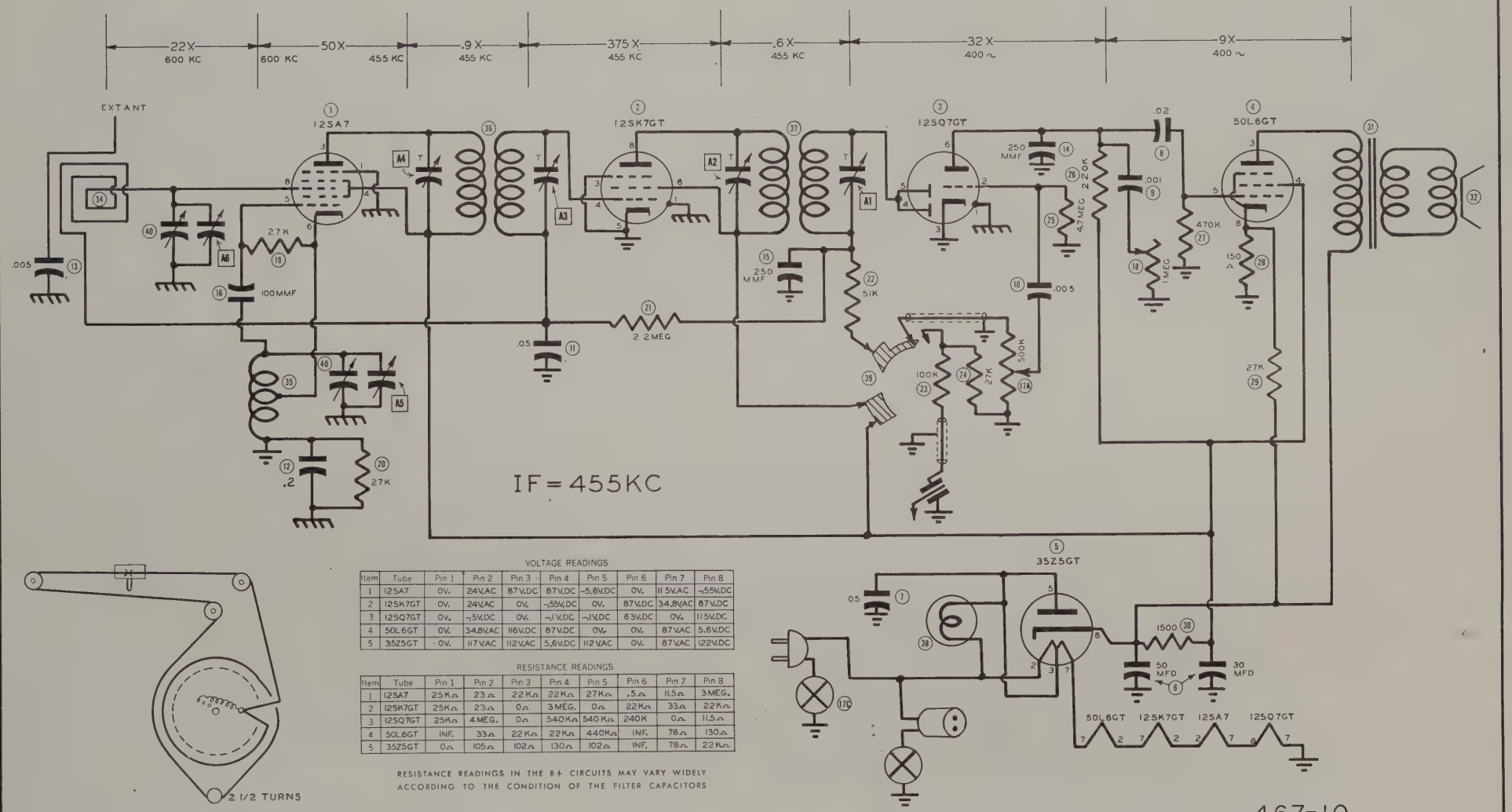
ITEM No.	PART NAME	ECA PART No.	NOTES
39	Switch	S-SR136-1	Radio-Phono
40	Tuning Cap.	S-ZQ501	2 Gang Variable Cap.

DISASSEMBLY INSTRUCTIONS

1. Remove the following push-on type control knobs and felt washers: Volume, continuous tone, tuning, and radio-phono.
2. Remove the three screws and washers from the bottom of cabinet holding chassis to cabinet.
3. Remove two Phillips head screws from board back of chassis compartment. Remove panel board.
4. Remove four wood screws and two Phillips head screws and washers from top of phono-motor board. Slide motor board up on end.
5. Disconnect phono-pickup jack.
6. Disconnect phono-motor plug.
7. Remove chassis from cabinet.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	24V.AC	87V.DC	87V.DC	-5.6V.DC	0V.	11.5V.AC	-55V.DC
2	12SK7GT	0V.	24V.AC	0V.	-55V.DC	0V.	87V.DC	34.8VAC	87V.DC
3	12SQ7GT	0V.	-5V.DC	0V.	-1V.DC	-1V.DC	63V.DC	0V.	115V.DC
4	50L6GT	0V.	34.8V.AC	116V.DC	87V.DC	0V.	0V.	87V.AC	5.6V.DC
5	35Z5GT	0V.	117V.AC	112V.AC	5.6V.DC	112V.AC	0V.	87V.AC	122V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	25Kn	23 n	22Kn	22Kn	27Kn	.5 n	11.5 n	3MEG.
2	12SK7GT	25Kn	23 n	0 n	3MEG.	0 n	22Kn	33 n	22Kn
3	12SQ7GT	25Kn	4MEG.	0 n	540Kn	540Kn	240K	0 n	11.5 n
4	50L6GT	INF.	33 n	22Kn	22Kn	440Kn	INF.	78 n	130 n
5	35Z5GT	0 n	105 n	102 n	130 n	102 n	INF.	78 n	22Kn

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-10

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

ELECTROMATIC
MODELS APH-301A, APH-301C

ELECTROMATIC MODEL APH-301A

TRADE NAME	Electromatic Models APH-301A, APH-301C
MANUFACTURER	Electromatic Mfg. Corp., 88 University Place, New York 3, N.Y.
TYPE SET	AC Operated Automatic Record Changer with 3 Tube Amp. and Speaker
TUBES (THREE)	Types, 12SK7GT Audio Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	115 Volts AC
RATING	.220 Amps. @ 117V AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	0V.	2V. DC	0V.	2V. DC	20V. DC	12.5V. AC	26V. DC
2	50L6GT	0V.	67V. AC	128V. DC	125V. DC	0V.	125V. DC	12.5V. AC	94V. DC
3	35Z5GT	117V. AC	98V. AC	96V. AC	0V.	117V. AC	133V. DC	67V. AC	134V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0 Ω	0 Ω	4 K Ω	890K Ω	4K Ω	1MEG	11.5 Ω	280K Ω
2	50L6GT	INF.	56 Ω	28K Ω	28K Ω	520K Ω	28K Ω	11.5 Ω	225 Ω
3	35Z5GT	200 Ω	85 Ω	82 Ω	520K Ω	200 Ω	28K Ω	56 Ω	28K Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ELECTROMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	12SK7GT	12SK7GT	6N	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ELECTROMATIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	50	150		2N521	DHN-2x50-150	TA-530	PRSA150-40-40	EZ5515	Filter
B	50	150							"
5	10	35		TC32	M-10-50	TA-510	PRS50-10	BR105	Cath. Bypass
6	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	50L6 Plate Bypass
7	.004	600		TP407	S-6-004	TC-24	684-004	DT6D4	Tone Compensation
8	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
9	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Screen Bypass
10	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Feedback
11	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Phono Coupling*
12	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation

*Not used in all models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ELECTROMATIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
13A	1 Meg.	1	RVC-A113	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 13A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
14A	1 Meg.	1	RVC-A113	MR53	D13-137	M-63-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 14A per instructions

RESISTORS

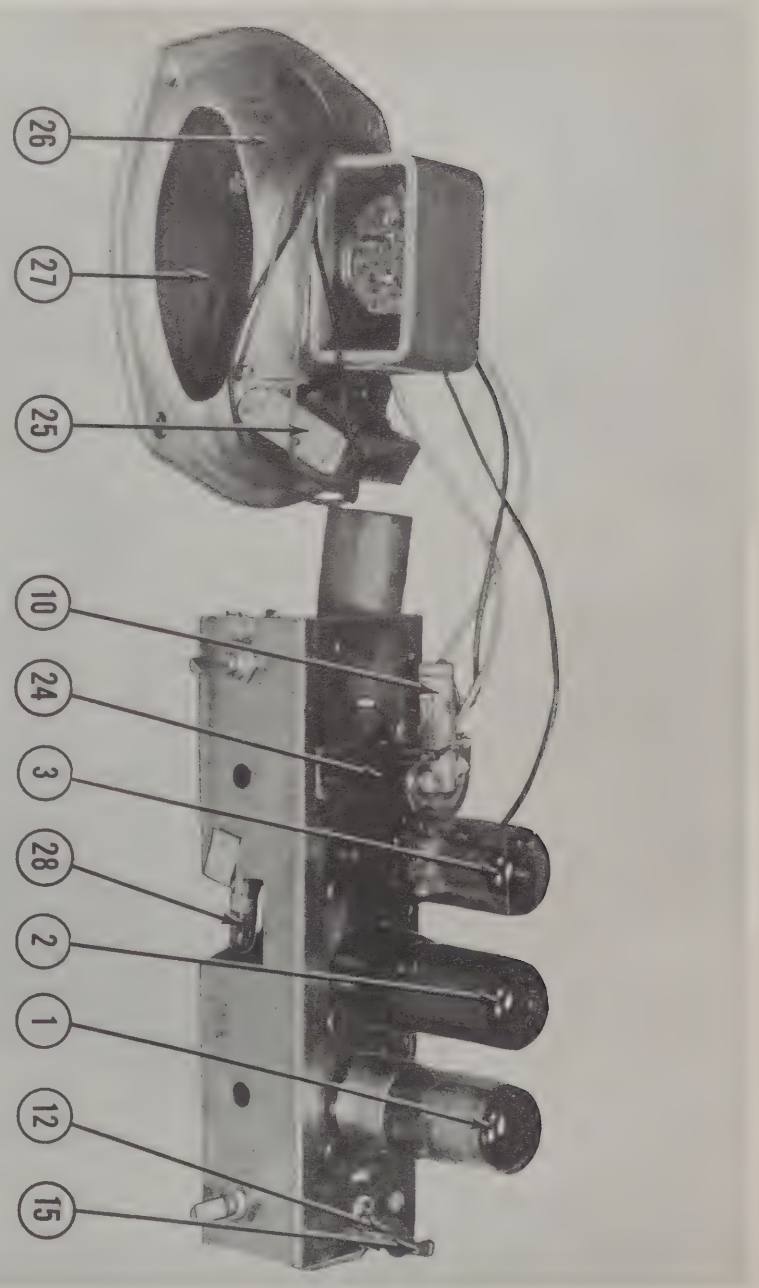
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ELECTROMATIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
15	260KΩ	½		BTS-270K	Red-Blue-Yl. Series Phono
16	4700Ω	½		BTS-4700	Yl.-Vi.-Red. 1st AF Cathode
17	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Screen Dropping
18	260KΩ	½		BTS-270K	Red-Blue-Yl. 1st AF Plate Load
19	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
20	120Ω	2		BW-½-120	Br.-Red-Br. Output Cathode-See Note
21	120Ω	2		BW-½-120	Br.-Red-Br. Output Cathode-See Note
22	2800Ω	1		BTA-2700	Red-Grn.-Red Filter
23	20Ω	1		BW-1-22	Red-Blk.-Blk. Surge Limiter
24	135Ω	10		AB-150	Line Dropping

Note-Some models use a single 140Ω resistor in place of Items 20 & 21.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ELECTROMATIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
25	1800Ω	2.7Ω	115Ω	.6Ω		A-3878	T-22845		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ELECTROMATIC PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-110		
26	PM	2.7Ω		Mod. P6-V		
	CONE DIA.	VC DIA.				
27	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

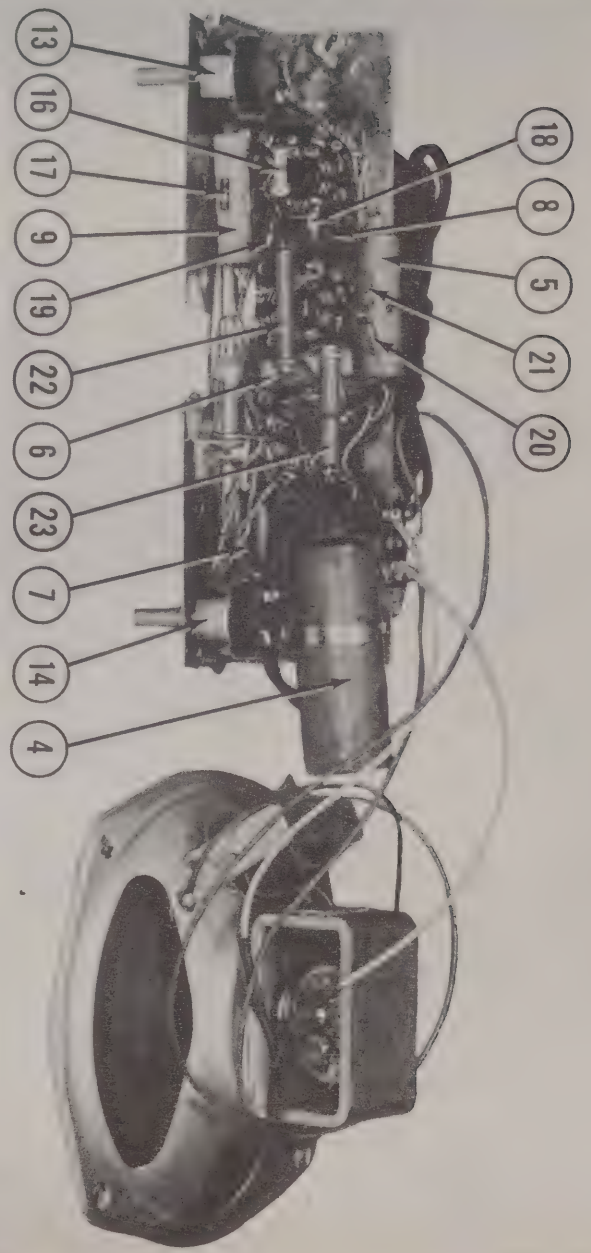
DIAL LIGHT

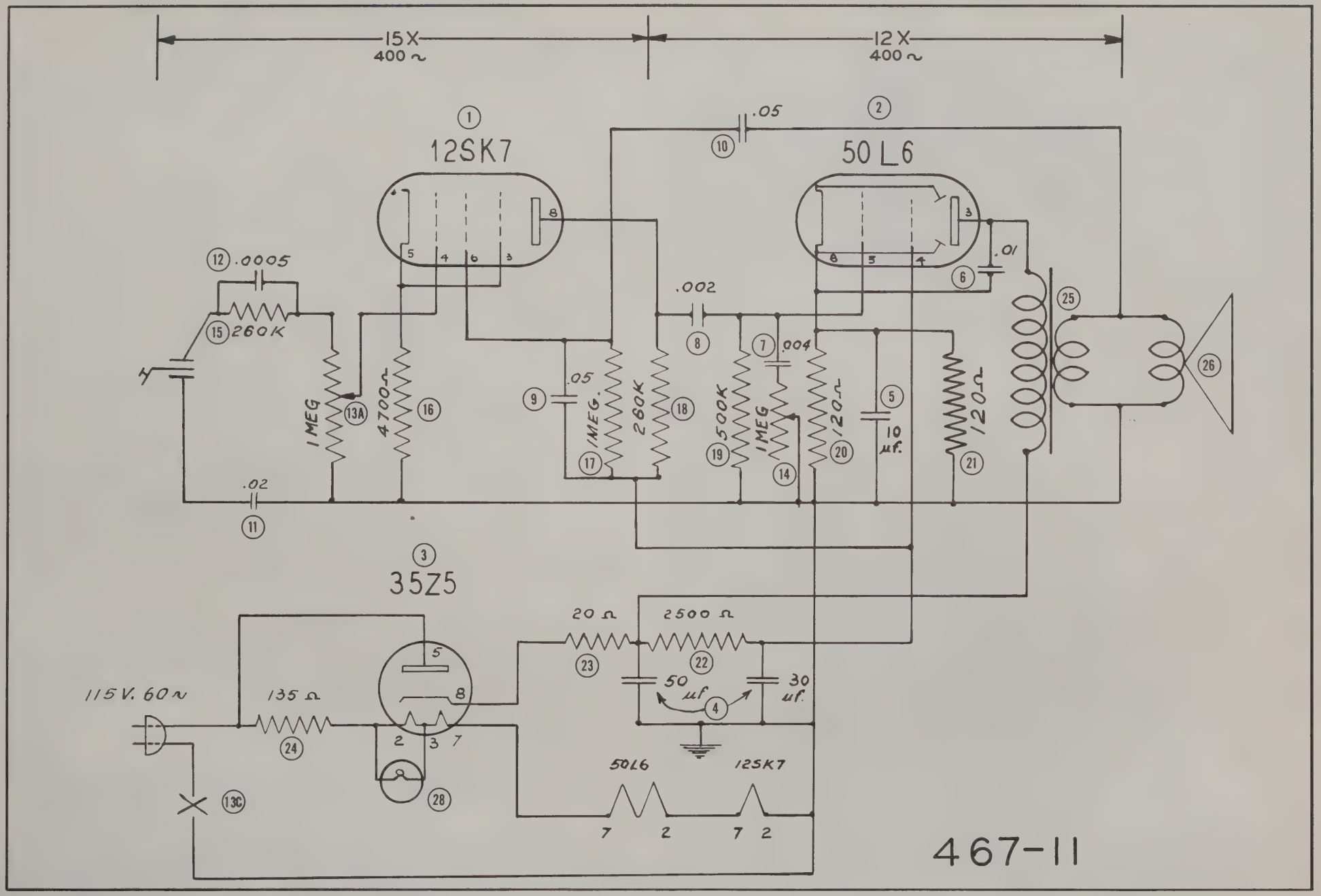
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ELECTROMATIC PART No.		INSTALLATION NOTES
25	Bayonet	6-8	0.15	Brown			Type 47

DISASSEMBLY INSTRUCTIONS

1. Remove the volume and tuning control push-on type knobs.
2. Remove the four screws and washers from motor board.
3. Lift motor board out of cabinet.
4. Remove back grill board from speaker compartment by removing two wood screws and washers.
5. Remove two hex nuts holding speaker mounting board to cabinet. Remove mounting board with speaker attached.
6. Remove chassis from motor board by removing two bolts and nuts.
7. Unsolder phono-motor power leads. One lead soldered to switch terminal on tone control and remaining lead soldered to line dropping resistor.
8. Remove phono pickup leads from terminal board on rear of chassis.

CHASSIS—BOTTOM VIEW

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400 ~
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.05
12
.0005
15
260K
1 MEG
13A
4700Ω
16
9
.05
1MEG.
17
260K
18
8
.002
7
.004
19
500K
1 MEG
14
120Ω
20
5
10 µf.
120Ω
21
6
.01
25
26
11
.02
3
35Z5
20 Ω
23
2500 Ω
22
50 µf
4
30 µf.
115 V. 60 ~
135 Ω
24
13C
28
50L6
12SK7
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467-11

EMERSON
MODEL 521

EMERSON
MODEL 521

EMERSON MODEL 521

TRADE NAME	Emerson Model 521 (Chassis No. 120013, 120031)
MANUFACTURER	Emerson Radio & Phono. Corp., 1118th Ave., New York, N.Y.
TYPE SET	AC Operated Portable Record Player with 3 Tube Amp. and Speaker
TUBES (THREE)	Types, 12AT6 Audio Amp., 50B5 Power Output, 35W4 Rectifier (Ch. 120031), 12SQ7 Audio Amp., 50L6GT Power Output, 35Z5GT Rectifier (Ch. 120013).
POWER SUPPLY	117 Volts AC
RATING	.240 Amps. @ 117V AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	-.5V.DC	0V.	0V.	13.5V.AC	0V.	0V.	48V.DC
2	50B5	0V.	8.8V.DC	34V.AC	88V.AC	118V.DC	123V.DC	0V.
3	35W4	127V.DC	0V.	88V.AC	117V.AC	116V.AC	115V.AC	127V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	20MEG.	0Ω	0Ω	12Ω	0Ω	0Ω	500KΩ
2	50B5	450KΩ	140Ω	127Ω	170Ω	35KΩ	35KΩ	450KΩ
3	35W4	35KΩ	INF.	170Ω	200Ω	210Ω	197Ω	35KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12AT6	12AT6	7BT	Or Octal Equivalent
2	Power Output	50B5	50B5	7BZ	" " "
3	Rectifier	35W4	35W4	5BQ	" " "

Tube Types Not Interchangeable

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	30	150		2N521	M-50+30-150	TA-530	PRSA150-40-40	BRD3515	Filter - Red
B	50	150							" - Green
5	16	150		TC45	M-16-150	UT-161	PRS150-16	BR1615	"
6	.15	200		TP417	S-4-1	TC-1	484-.15	DT4P1	Line Isolation
7	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	50B5 Plate Bypass
8	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
9	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Phono Coupling
10	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Audio Coupling
11	110	500		MC235	M0.5-31	1FM-31	1468-0002	5W5T1	Tone Compensation
12	212								" "

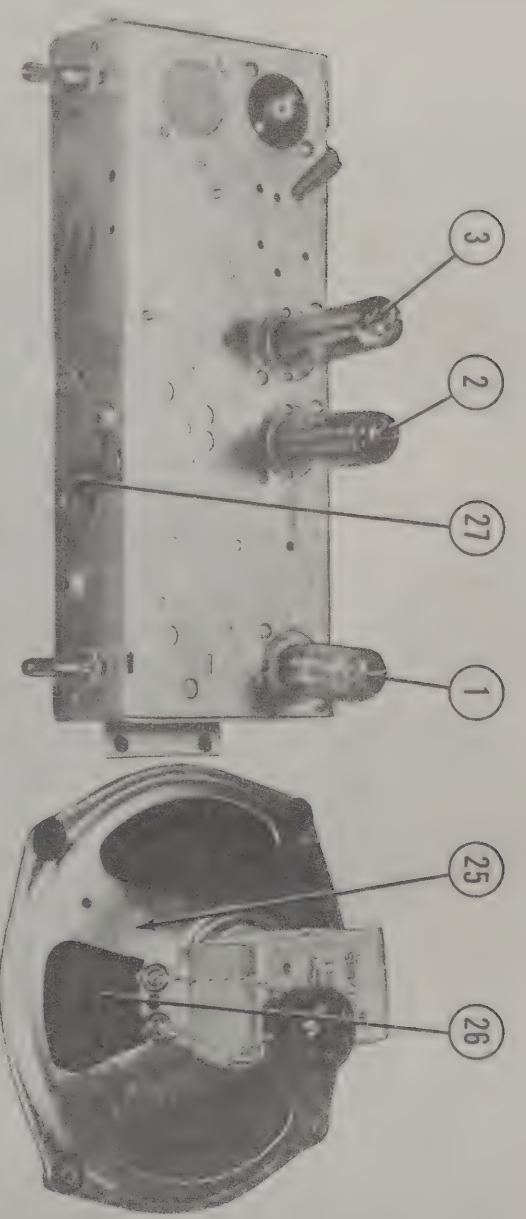
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
13A	500KΩ	1	390330	UM156	D11-133	AM-55-S	Volume Control
B	Shaft		Not Req.	S525	E	KSS-3	Attach to 13A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
14A	2 Meg.	1	390370	MK403	D13-139	AM-66-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 14A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
15	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue. 1st AF Grid
16	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. Feedback
17	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
18	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
19	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
20	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter
21	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter
22	14.5Ω	2		BW-1-15	Rectifier Ballast
23	133Ω	10		AB-150	Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
24	2010Ω	3.2Ω	224Ω tapped @ 9Ω	.85Ω	734000	A-3876*			*Drill one new mounting hole. Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.		
25	FIELD PM	VC IMP. 3.2Ω	180011	SI-11, Mod. P6-A		
26	CONE DIA. 6"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

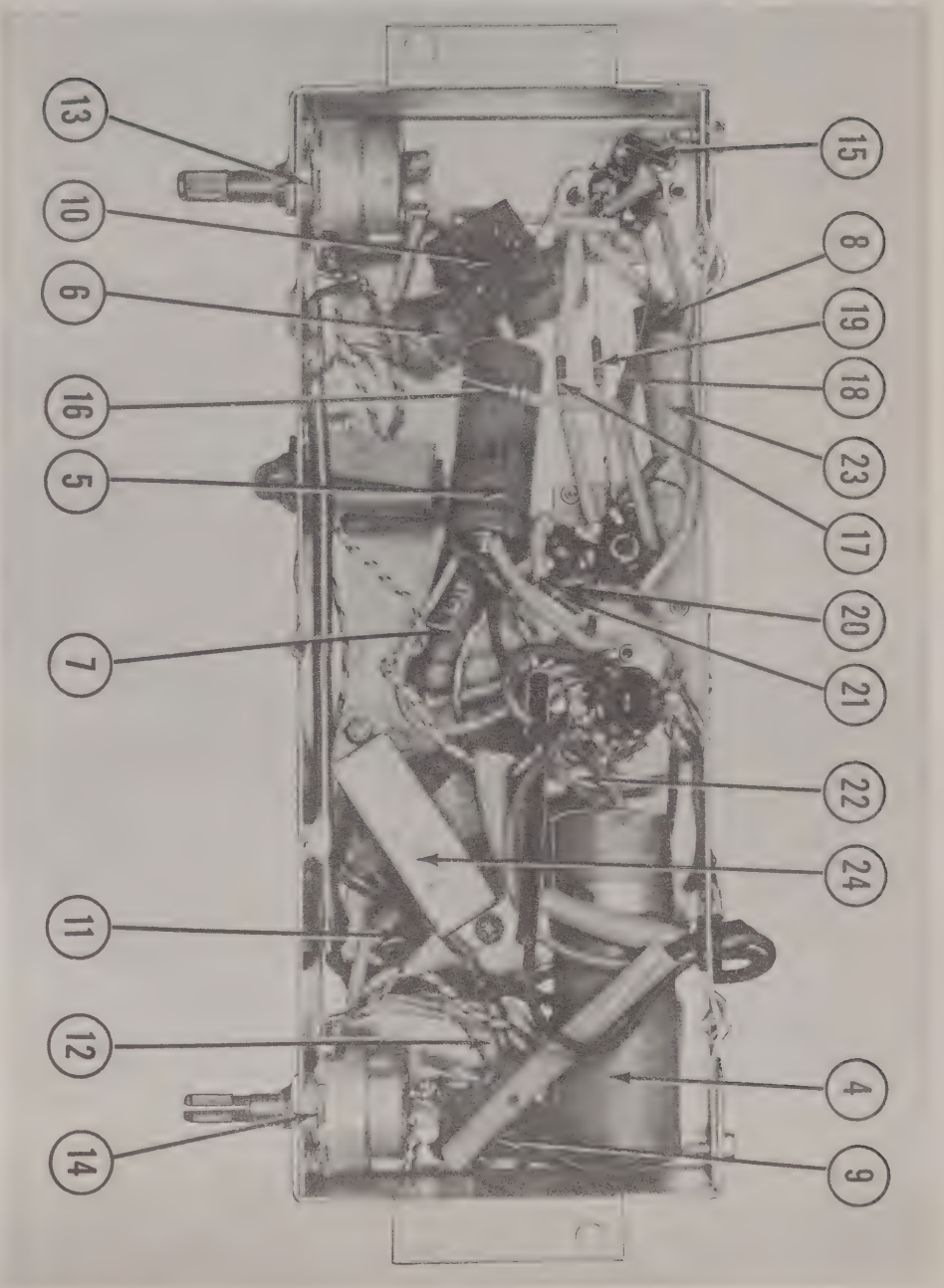
DIAL LIGHT

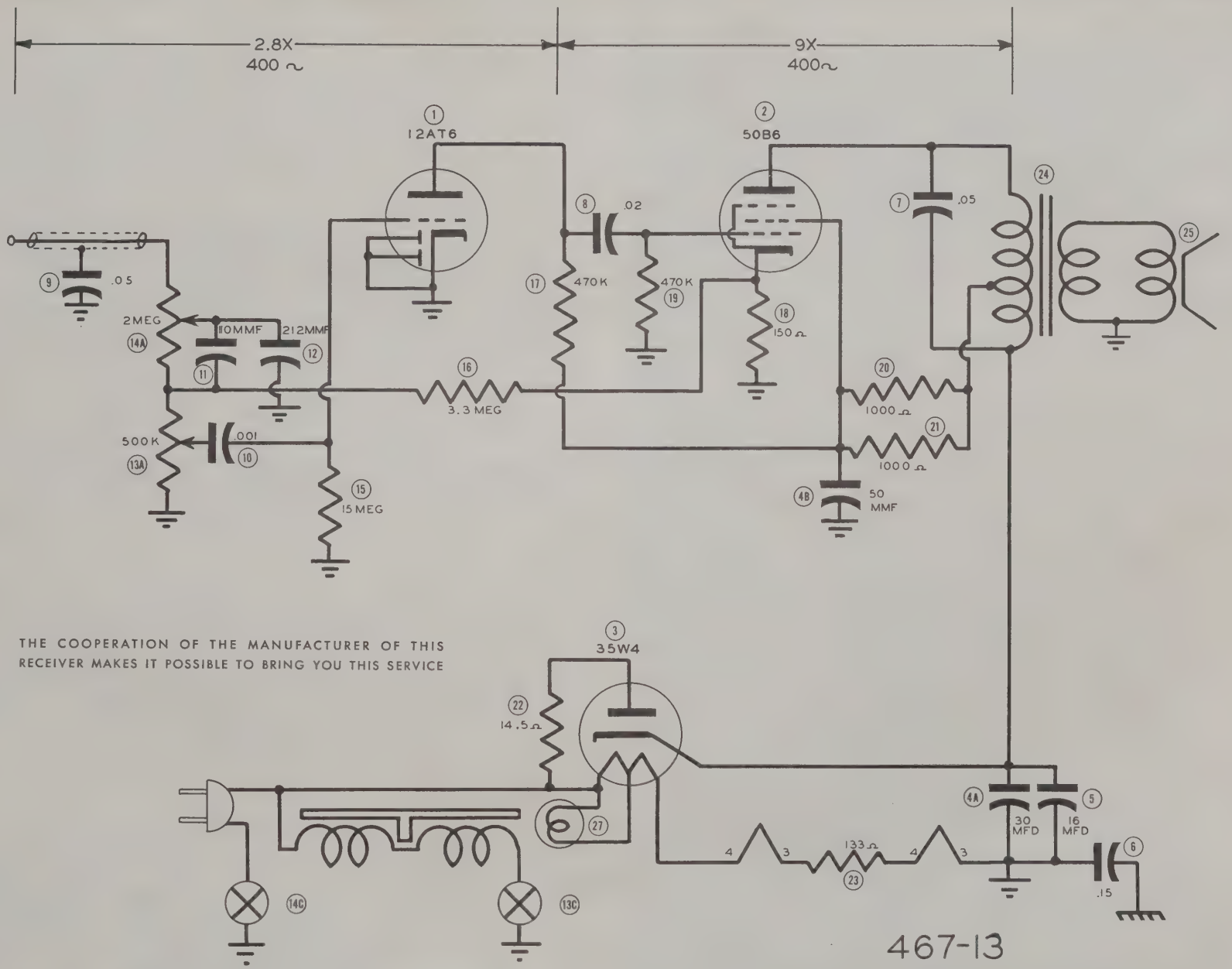
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					EMERSON PART No.		
27	Bayonet	6-8	0.15	Brown			Type 47

EMERSON MODEL 521

1. Remove the two control push-on type knobs.
2. Remove spring clip holding turntable disc.
3. Remove four Phillips head bolts and washers from motor board.
4. Remove two Phillips head screws from front inside cover board.
5. Remove two Phillips head screws holding cover bracket assembly to motor board.
6. Remove motor board.
7. Disconnect speaker receptacle from speaker plug.
8. Disconnect phono-motor receptacle from motor plug.
9. Disconnect phono-pickup plug from chassis.
10. Remove four nuts and washers from speaker bolts. Remove speaker.
11. Remove four nuts and lock washers from chassis bolts. Remove chassis.

CHASSIS—BOTTOM VIEW

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470K
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150 Ω
16
3.3 MEG
20
1000 Ω
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4B
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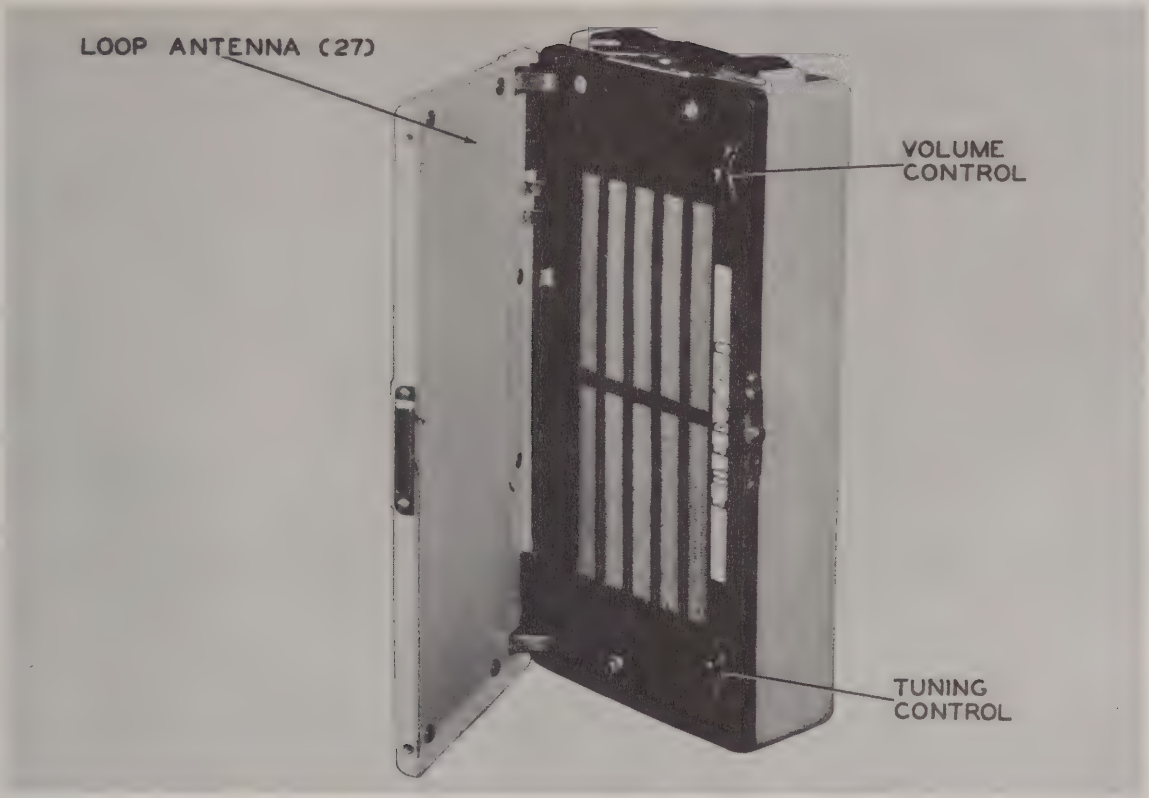

EMERSON MODEL 508

TRADE NAME	Emerson Model 508 (Ch. 120008)
MANUFACTURER	Emerson Radio & Phono. Corp., 111 Eighth Ave., New York 11, N.Y.
TYPE SET	Battery Operated Personal Portable Receiver - Self Contained Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY	1½ Volt "A" Battery (Standard D Flashlight Cell) and 67½ Volt "B" Battery (Eveready "Minimax" No. 467 or equivalent)
TUNING RANGE—BROADCAST	540-1600KC RATING 260MA @ 67½ V DC & 7MA @ 1.5V DC

ALIGNMENT INSTRUCTIONS

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01	High side to stator of larger section of variable. Low side to chassis.	455KC	High freq. end. (Variable fully open)	Across voice coil	A1,A2, A3.	Adjust for maximum output.
	Loop	1610KC	"	"	A4	Connect signal generator to a coil of three or four turns of wire approximately 12 inches in diameter. Place parallel to and in line with the receiver loop at a distance of 15 to 20 inches. Adjust for maximum output.
	"	1500KC	Tune to maximum output.	"	A5	"
	"	600KC	"	"	A6	Rock dial and adjust for maximum output. Recheck A4 at 1610KC and A5 at 1500KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5	8	100	925070	TC42	M-8-150	UT-81	PRS150-8	BR815	Pwr. Supp. Bypass
6	.003	150	920140					ZY2D3	3S4 Plate Bypass
7	.001	100	920130	MT105	TTF-1-001			ZY2D1	Audio Coupling
8	.02	100	920120	MT127	TTF-1-02			ZY1S2	Audio Screen Bypass
9	.003	150	920140					ZY2D1	Audio Coupling
10	.02	100	920120	MT127	TTF-1-02			ZY1S2	IF Screen Bypass
11	.02	100	920120	MT127	TTF-1-02			ZY1S2	AVC Filter
12	100		928010						Audio Plate Bypass Cer.
13	100		928010						IF Bypass Vol. Cont. Cer.
14	200		910110		MMA-1-32				Osc. Grid Capacitor

CONTROLS

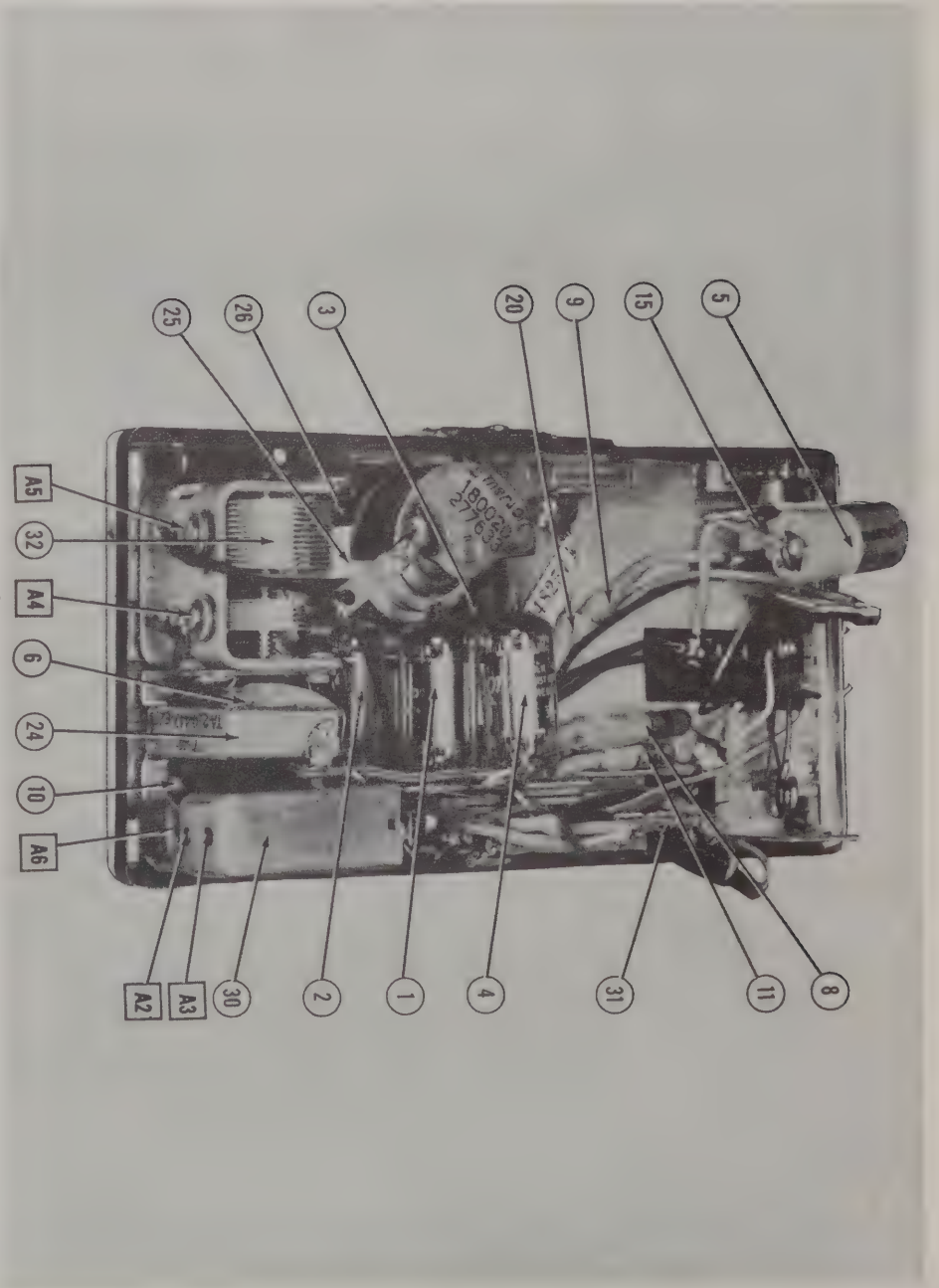
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15	3 Meg.	1	390040				Volume Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
16	100KΩ	½	320970	BTS-100K	Br.-Blk.-Yl. Osc. Grid
17	10KΩ	½	310730	BTS-10K	Br.-Blk.-Or. Converter Screen Dropping-See Note
18	3.3 Meg.	½	321330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	1 Meg.	½	321210	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
20	10 Meg.	½	321450	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
21	4.7 Meg.	½	321370	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Screen Dropping
22	1 Meg.	½	321210	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load-See Note
23	3.3 Meg.	½	321330	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid-See Note

Note-Some models contain resistors varying in value as selected in production.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
24A	6700Ω	4.9Ω	580Ω	1.8Ω	734204		T-22S46*		*Cut off mounting tabs and solder to chassis.
B					734090				Alternate transformer.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
25A	FM	4.9Ω	180020			
25B			18C002			Alternate Speaker
	CONE DIA.	VC DIA.				
26	1¾"x2½"	7/16"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

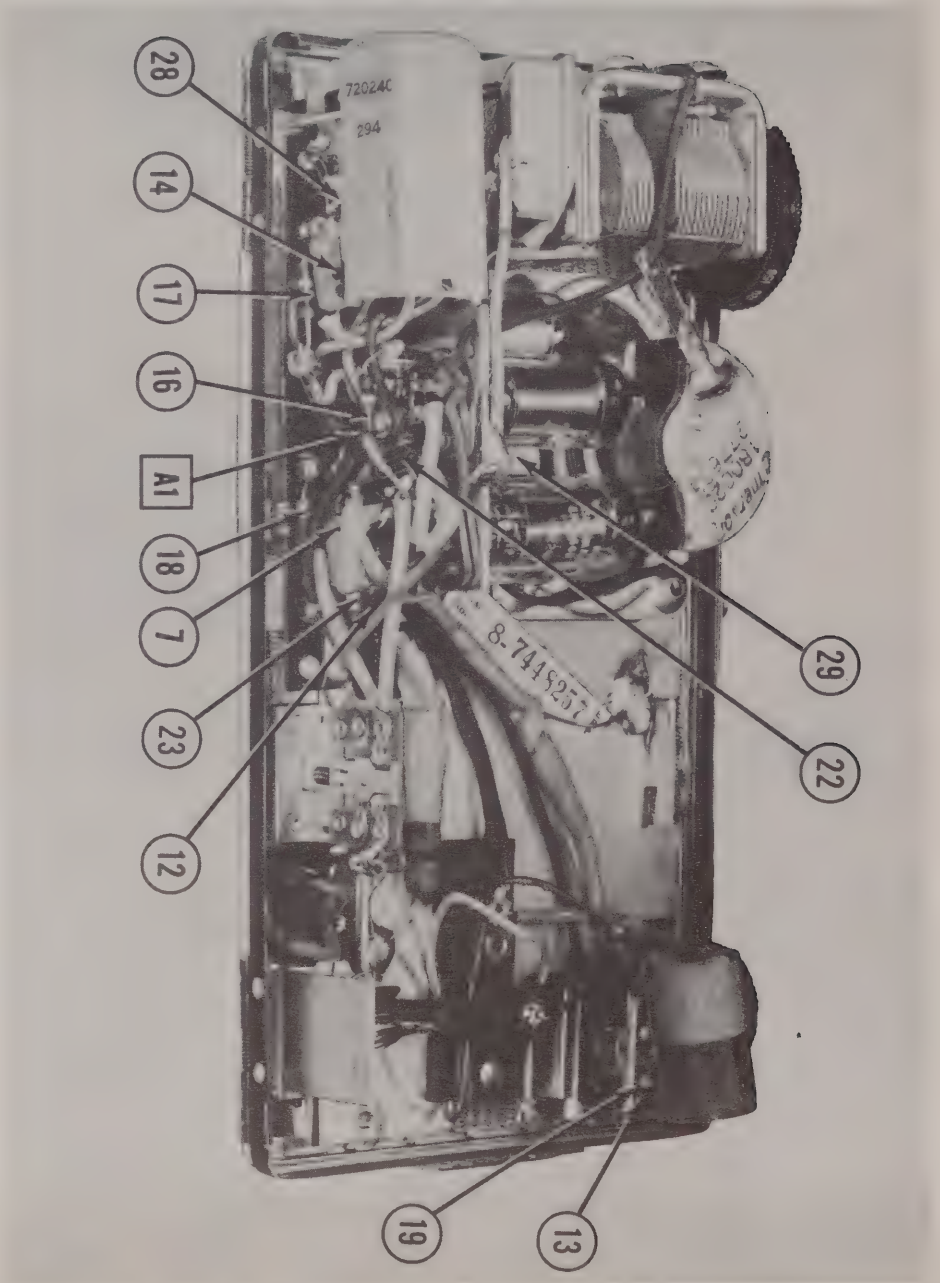
R F COILS

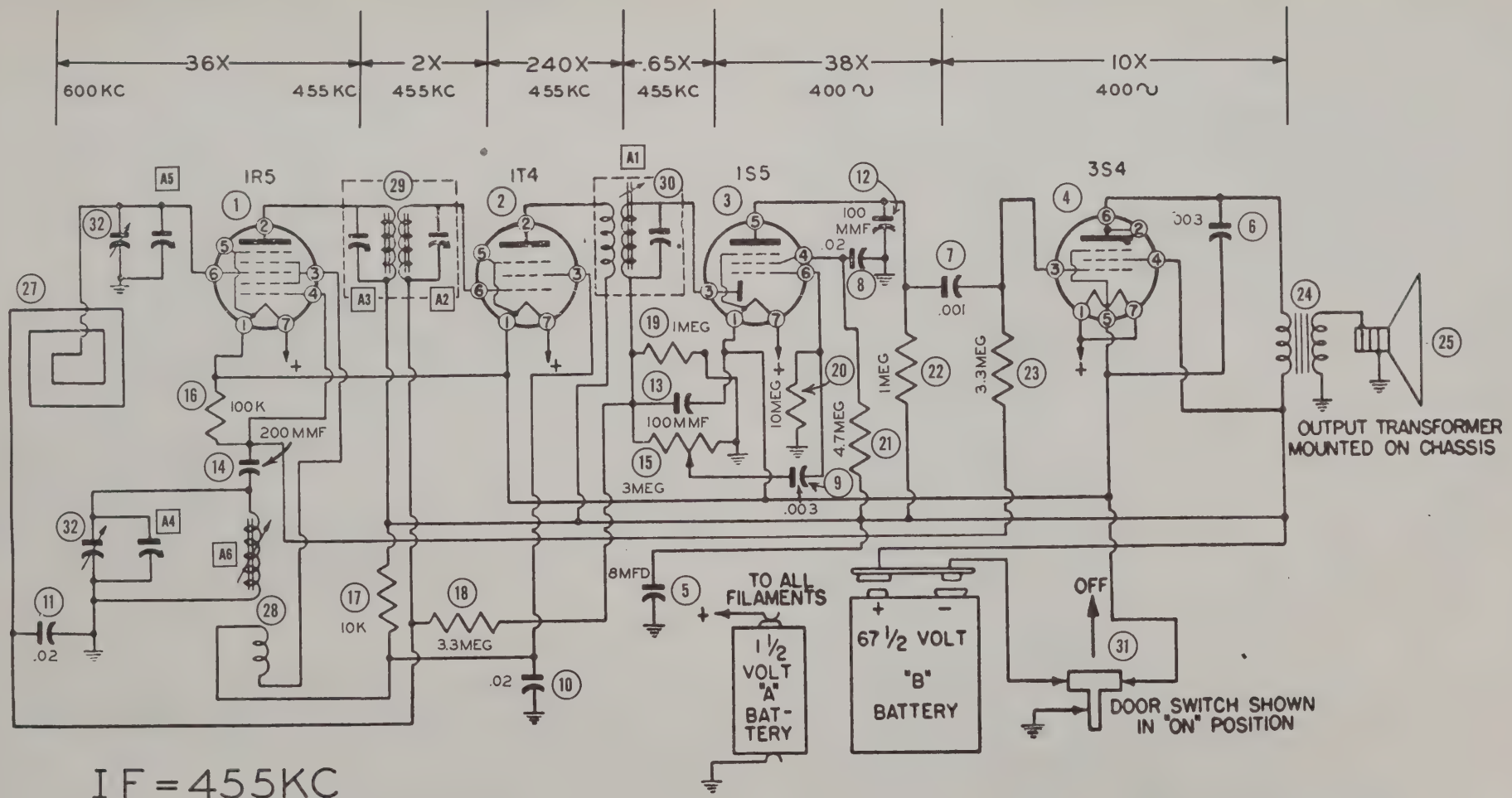
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MEISSNER PART No.	INSTALLATION NOTES
27	Loop Ant.		2.8Ω	700030		
28	Osc. Coil	1Ω	3.5Ω	716040		
29	Input IF	20Ω	16Ω	760240		
30	Output IF	46Ω	20Ω	720260		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
31	Lid Switch	510040	On-Off
32A	Tuning Cap.	900120 or	2 Gang Variable Cap.
B	Tuning Cap.	900140	" " " "
	Battery Cable	585000	"B" Battery
	Plastic Shell	460020	(Black)
	Plastic Door	460030	
	Loop Cover	630000	Plastic (Black)
	Metal Front	410389	(Maroon)
	Tuning Wheel	460050	Plastic (Black)
	Volume Wheel	460060	" "
	Leather Handle	595000	
	Release Catch	410969	Male
	" "	410959	Female

CHASSIS—BOTTOM VIEW





IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	IR5	0V.	65V.DC	42V.DC	-2.3V.DC	0V.	0V.	1.45V.DC
2	IT4	0V.	65V.DC	42 V.DC	0V.	0V.	0V.	1.45V.DC
3	IS5	0V.	0V.	-.15 V.DC	12 V.DC	12 V.DC	0V.	1.45V.DC
4	3S4	1.45V.DC	62 V.DC	-5V.DC	65V.DC	0V.	62 V.DC	1.45V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	IR5	*	180 K Ω	190K Ω	84K Ω	*	3.5MEG	*
2	IT4	*	180 K Ω	190K Ω	INF.	*	3.5MEG	*
3	IS4	*	INF.	780K Ω	5 MEG	1.5MEG	10 MEG	*
4	3S4	*	180 K Ω	3.2MEG	180 K Ω	*	180K Ω	*

* DO NOT USE OHMMETER MEASURE FILAMENT RESISTANCE.

467-12

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is grounded.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

EMPRESS
MODELS 55, 56

EMPRESS
MODELS 55, 56

EMPRESS MODELS 55, 56

TRADE NAME	Empress Models 55, 56
MANUFACTURER	Empire Designing Corp., 1560 Broadway, New York 19, N. Y.
TYPE SET	AC-DC Superheterodyne Receiver
TUBES	(FIVE) Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	117 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .260 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #7 of 12BE6. Low side to B-.	455KC	High freq.end	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
200 MMF	High side to ext. ant. lead. Low side to B-.	1600KC	"	"	A5	Adjust for maximum output.
200 MMF	"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output. Recheck A5 at 1600KC and A6 at 1400KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMPRESS PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7GH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50A5	50A5	7EZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMPRESS PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150		FP214	DY-2x50-150	EL-25	AF88D	UP6BJ34	Filter - Red
B	40	150							" - "
7	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.25	200		TP430	S-4-25	TC-2	464-.25	DT4P25	Line Isolating
9	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	50B5 Plate Bypass
10	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
11	.002	600		TP406	S-6-002	TC-22	684-002	DT6L2	" "
12	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter
14	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" "
15	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
16	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Ant. Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	EMPRESS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	250KΩ	1	S-196	MR44	D13-130	M-64-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

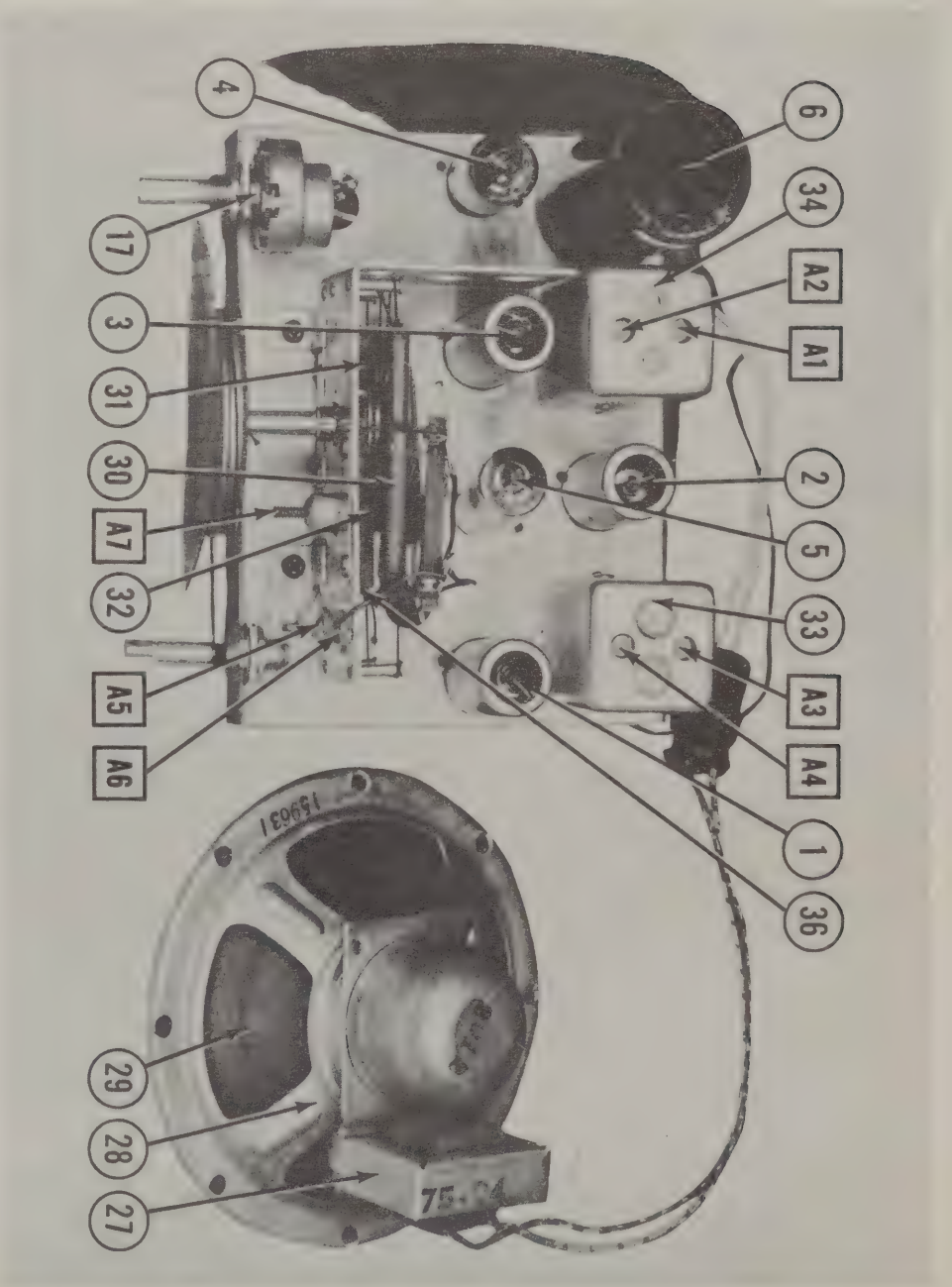
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMPRESS PART No.	IRC PART No.	
18	24KΩ	½		BTS-22K	Red-Yl.-Or. Osc. Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	130Ω	½		BW-½-120	Br.-Or.-Br. IF Cathode
21	47KΩ	½		BTS-47K	Yl.-Vi.-Or. IF Filter
22	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
23	200KΩ	½		BTS-220K	Red-Blk.-Yl. 1st AF Plate Load
24	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
25	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
26	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMPRESS PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
27	2500Ω	3.2Ω	160Ω	.8Ω	75-04	A-3376*	T-22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMPRESS PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107		
28	M.	3.3Ω	2012	Mod.P5-V		
	CONE DIA.	VC DIA.				
29	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

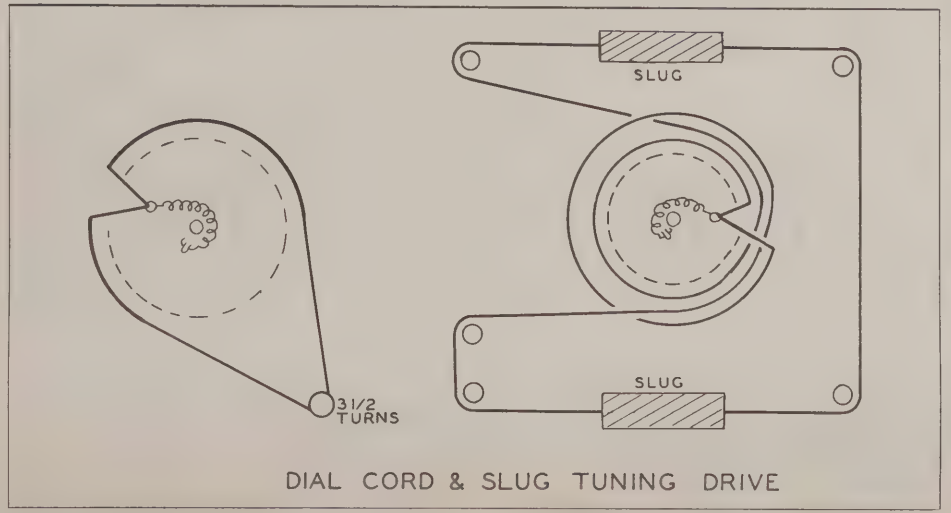
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMPRESS PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
30	Ant. Coil		7Ω			
31	Osc. Coil		4Ω			
32	Osc. Padder	4Ω				
33	Input IF	20.3Ω	20.3Ω		16-6656	
34	Output IF	20.3Ω	20.3Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA EMPRESS PART No.		INSTALLATION NOTES
35	Bayonet	6-8	.15	Brown			Type 47

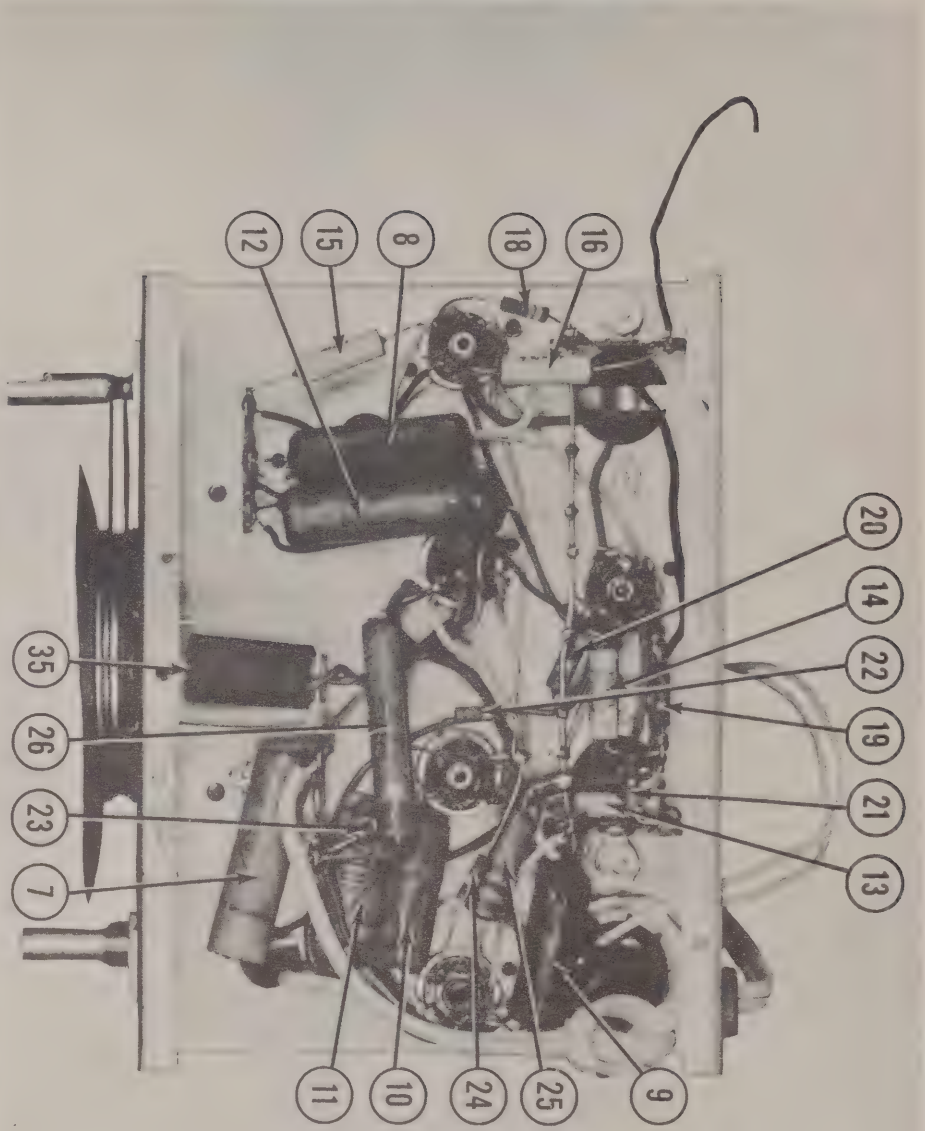
MISCELLANEOUS

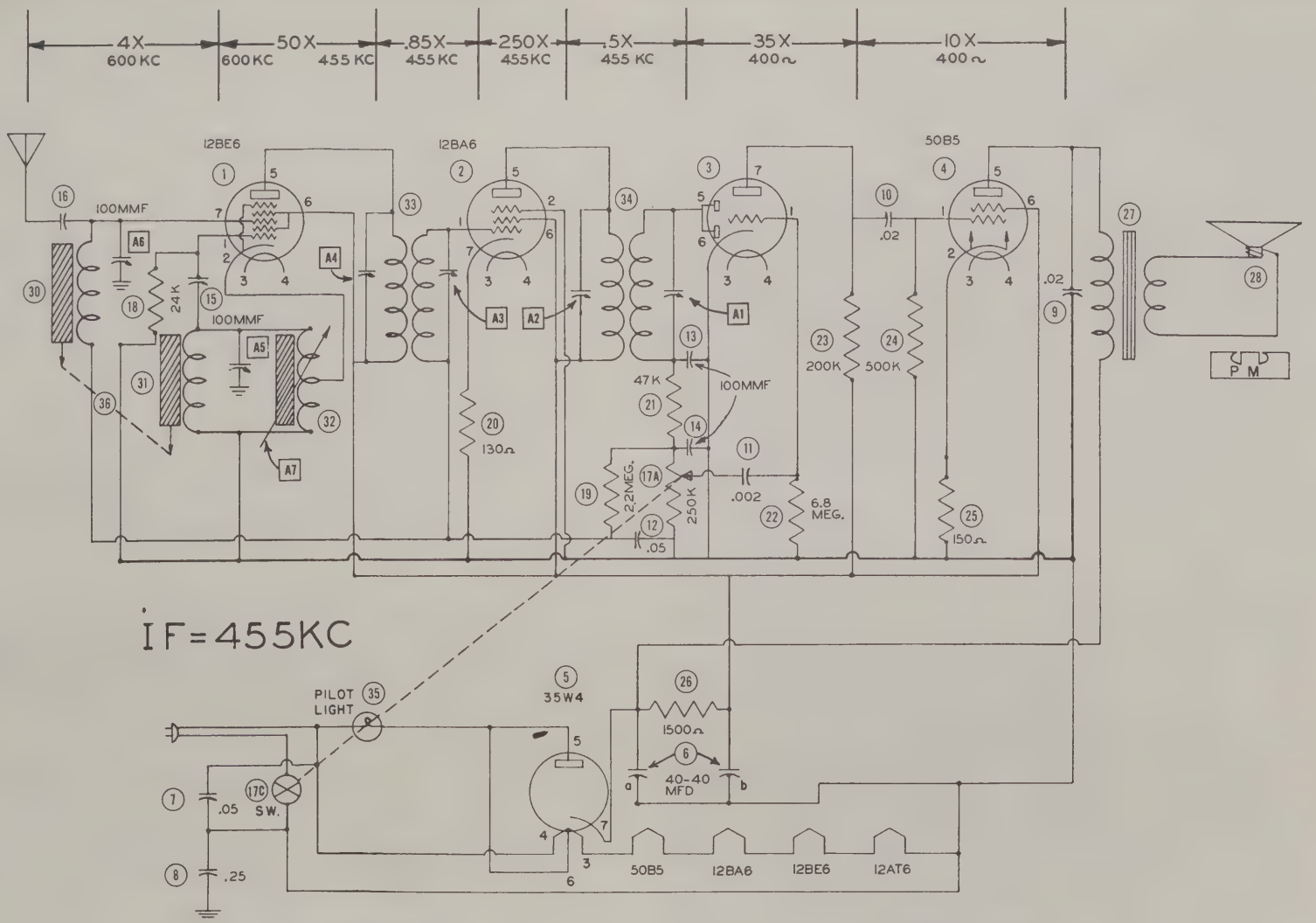
ITEM No.	PART NAME	EMPRESS PART No.	NOTES
36	Tuner Assby.		



DIAL CORD & SLUG TUNING DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1.	12BE6	−5V.DC	0V.	24.5V.AC	12.5V.AC	92V.DC	92V.DC	−.02V.DC
2	12BA6	−.02V.DC	0V.	24.5VAC	36.5V.AC	92V.DC	92V.DC	1.15 V.DC
3	12AT6	−.4V.DC	0V.	0V.	12.5V.AC	−35V.DC	−35V.DC	47V.DC
4	50B5	0V.	6.8V.DC	88V.AC	36.5VAC	118V.DC	93V.DC	0V.
5	35W4	0V.	0V.	117V.AC	88V.AC	117V.AC	93V.DC	127V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	24 KΩ	1Ω	26Ω	13Ω	470 KΩ	470 KΩ	1.8MEG.
2	12BA6	1.8MEG.	0Ω	26Ω	38Ω	470 KΩ	470 KΩ	102Ω
3	12AT6	6 MEG.	0Ω	0Ω	13Ω	255KΩ	255KΩ	670 KΩ
4	50B5	460 KΩ	135Ω	85Ω	38Ω	470KΩ	470 KΩ	460 KΩ
5	35W4	INF.	INF.	111Ω	85Ω	111Ω	88Ω	470 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

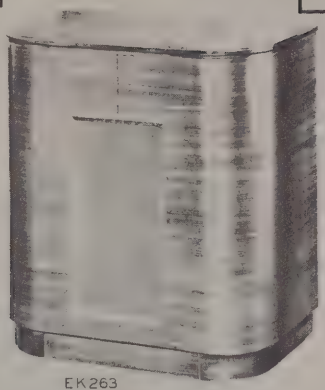
1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

PHOTOFACT* Folder

*TRADE MARK

FARNSWORTH
MODELS EC-260, EK-262, EK-263BL, EK-263WL, EK-264BL, EK-264WL, EK-265

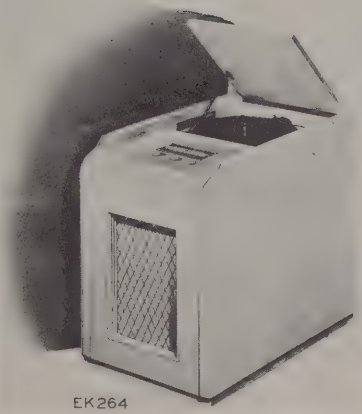
FARNSWORTH
MODELS EC-260, EK-262, EK-263BL, EK-263WL, EK-264BL, EK-264WL, EK-265



EK263

EC260

EK265



EK264

FARNSWORTH MODEL EC-260

TRADE NAME	Farnsworth Models EC260, EK262, EK263BL, EK263WL, EK264BL, EK264WL, EK265
MANUFACTURER	Farnsworth Television & Radio Corp., Fort Wayne, Indiana
TYPE SET	AC Operated Combination Automatic Phono. - Superheterodyne Receiver, Self Contained Loop Antenna (Model EC-260 has radio section only)
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .430 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at last reference mark at left end of dial. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
250 MMF.	High side to ext. ant. lead. Low side to chassis.	1500KC	1500KC	"	A5	" " " "
250 MMF.	"	"	"	"	A6	" " " "
Check pointer calibration at 600KC						

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FARNSWORTH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	350	25180	FP416*	DY-404*	EL-432*		UP9DJ55	■ Filter
B	20	300							▲ "
C	20	250							"
8	.005	600	25031	TP408	S-6-005	TC-25	684-005	DT6D5	Line Bypass
9	.003	600	25184	TP406	S-6-003	TC-23	684-003	DT6D3	Tone Compensation
10	.002	600	25185	TP405	S-6-002	TC-22	684-002	DT6D2	" "
11	.01	600	25194	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
12	.003	600	25184	TP406	S-6-003	TC-23	684-003	DT6D3	6V6 Plate Bypass
13	.01	600	25194	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
14	.005	600	25183	TP408	S-6-005	TC-25	684-005	DT6D5	" "
15	.05	600	25196	TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
16	.1	600	25215	TP418	S-6-1	TC-1	684-.1	DT6P1	Conv. Plate Bypass
17	.1	600	25215	TP418	S-6-1	TC-1	684-.1	DT6P1	Screen Bypass
18	.05	600	25196	TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
19	100	500	25188	MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
20	240	500	25187	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Diode
21	47	500	25193	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
22	100	500	25188	MC235	M0.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

*Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FARNSWORTH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23	3 Meg.	1	78071				Volume Control
24	2 Meg.	1	90148				Tone Control & Radio-Phono Switch

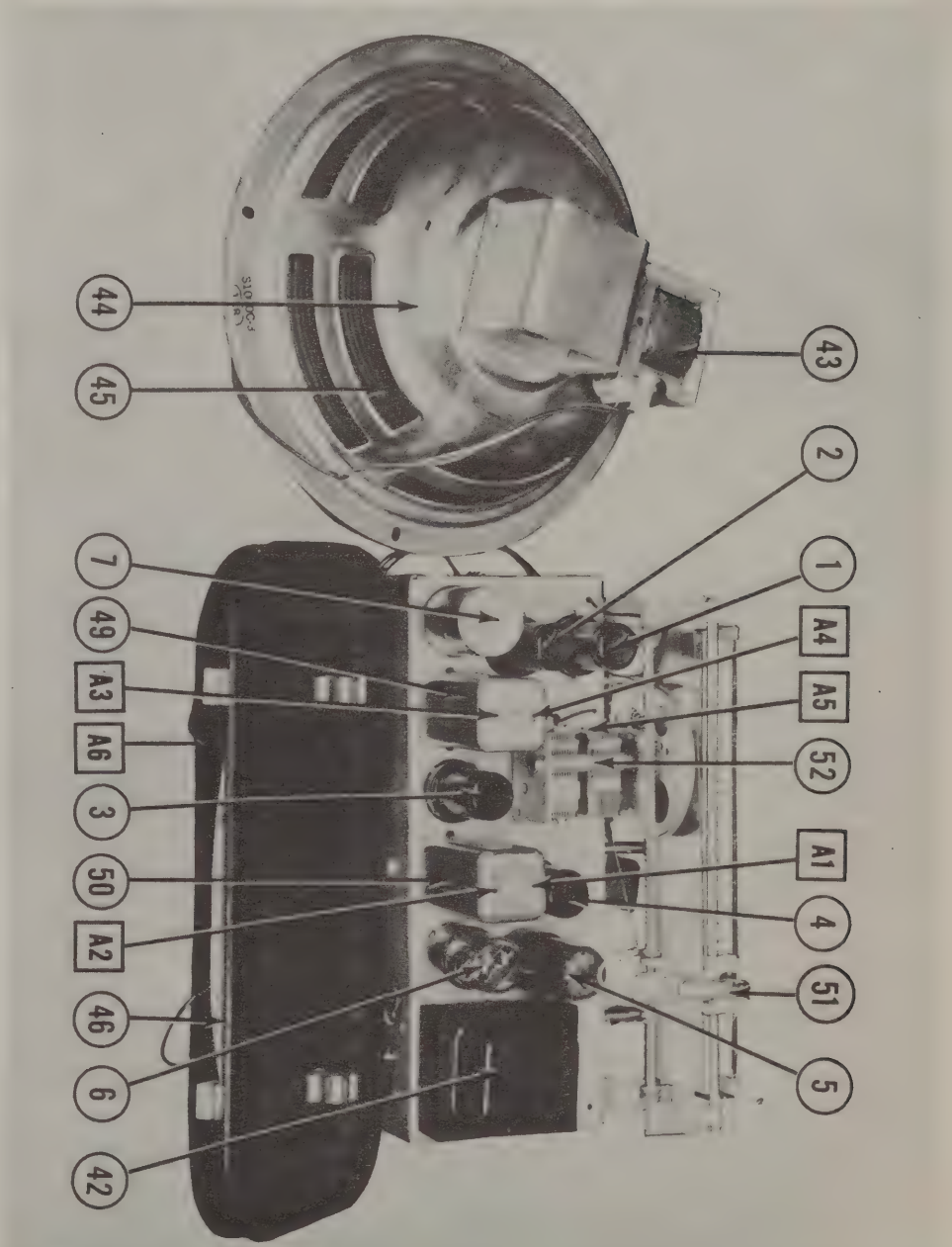
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
25	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
26	4700Ω	½	77211	BTS-4700	Yl.-Vi.-Red RF Plate Load
27	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. Converter Grid
28	22KΩ	½	77266	BTS-22K	Red-Red-Or. Osc. Grid
29	470Ω	½	77261	BTS-470	Yl.-Vi.-Br. Converter Plate Filter
30	12KΩ	2	77155	BT-2-12K	Br.-Red-Or. Screen Dropping
31	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Series Phono.
32	2.2 Meg.	½	77270	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
33	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. IF Filter
34	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
35	6.8 Meg.	½	77273	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
36	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
37	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Tone Compensation
38	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Output Grid
39	270Ω	1	77174	BW-1_270	Red-Vi.-Br. Output Cathode
40	100Ω	½	77258	BW-½-100	Br.-Blk.-Br. Filter
41	2200Ω	2	77301	BT-2-2200	Red-Red-Red Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	
42	117VAC @ .430A	470VCT @ .063A	6.6VAC @ 2.5A		94025		T-22R02	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FARNSWORTH PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	INSTALLATION NOTES
43A	5700Ω	3.8Ω	275Ω	.25Ω	94197	A-38771	T-229461	Used with models EC-260,EK-265 fuse smaller mounting holes provided.
B					94198			Used with model EK-262
C					94199			Used with models EK-263,EK-264

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS VC IMP.	REPLACEMENT DATA FARNSWORTH PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
44A	PM	3.8Ω	81125	ST-120 Mod. P10-S	Used with Models EC-260, EK-265
B			81124		Used with Models EK-263, EK-264
C			81123		Used with Model EK-262
	CONE DIA.	VC DIA.			
45A	3-3/4"	15/16"	NOT REALILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

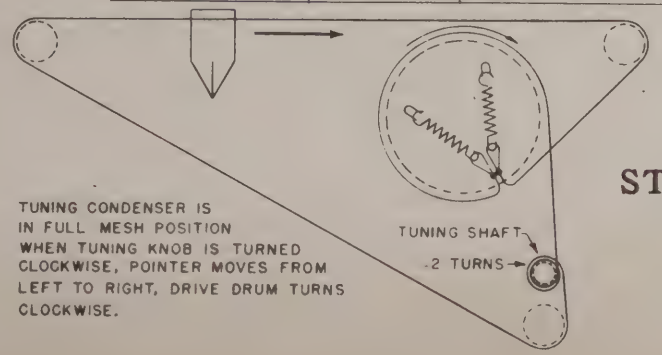
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FARNSWORTH PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
46A	Loop Ant.	0Ω	1Ω	38533		Used in models EK262, EK264
B	Loop Ant.			38545		" " " EC260, EK263, EK265
47	Wave Trap	‡		38484		‡No continuity through trap
48	Osc. Coil	.8Ω	5.5Ω	38483	14-1040	
49	Input IF	12.2Ω	14.1Ω	38536	16-6658	
50	Output IF	12.6Ω	14.2Ω	38537	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA FARNSWORTH PART No.	INSTALLATION NOTES
51	Bayonet	6-8	0.25	Blue	42135	Type 44

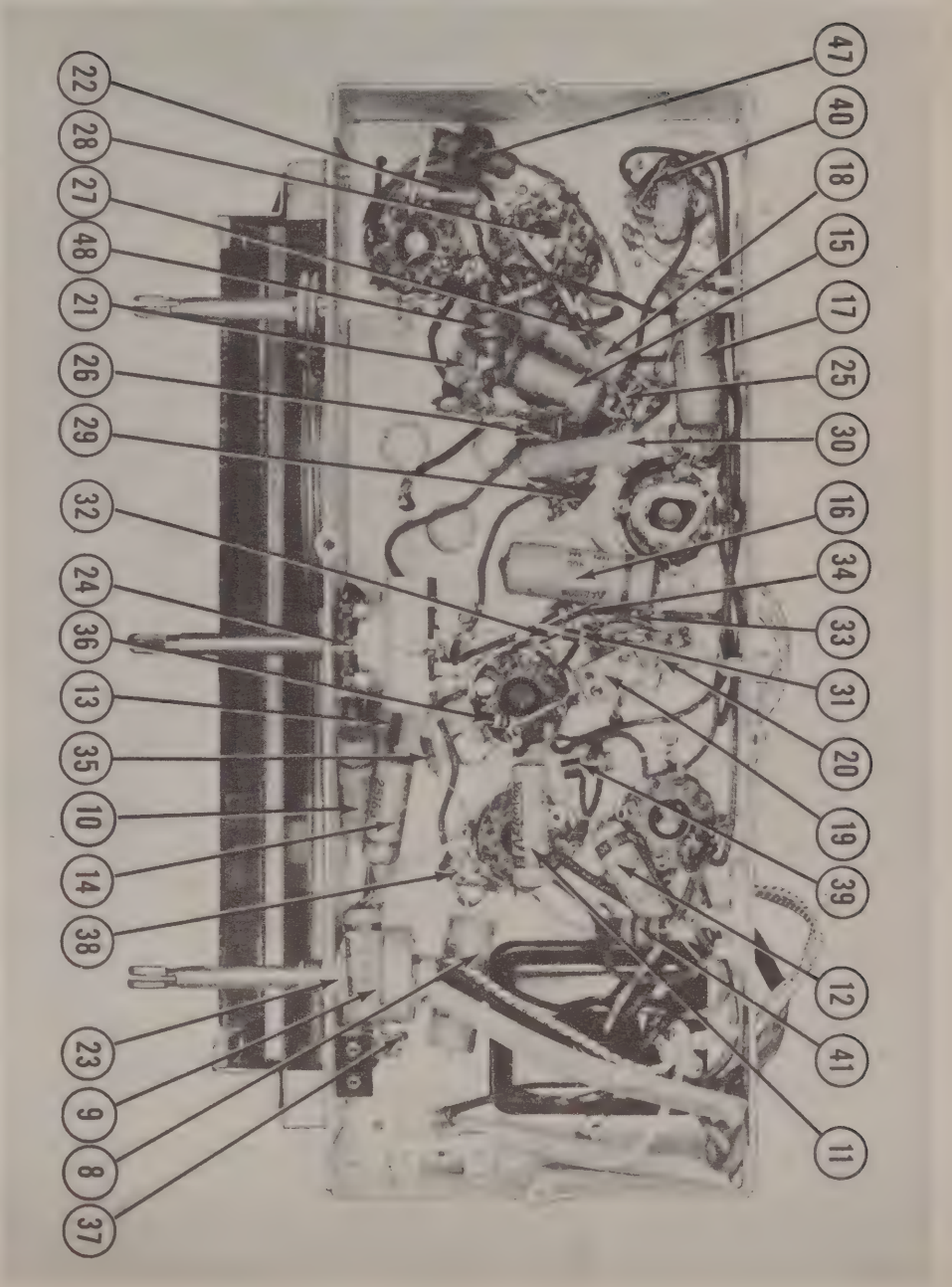
MISCELLANEOUS

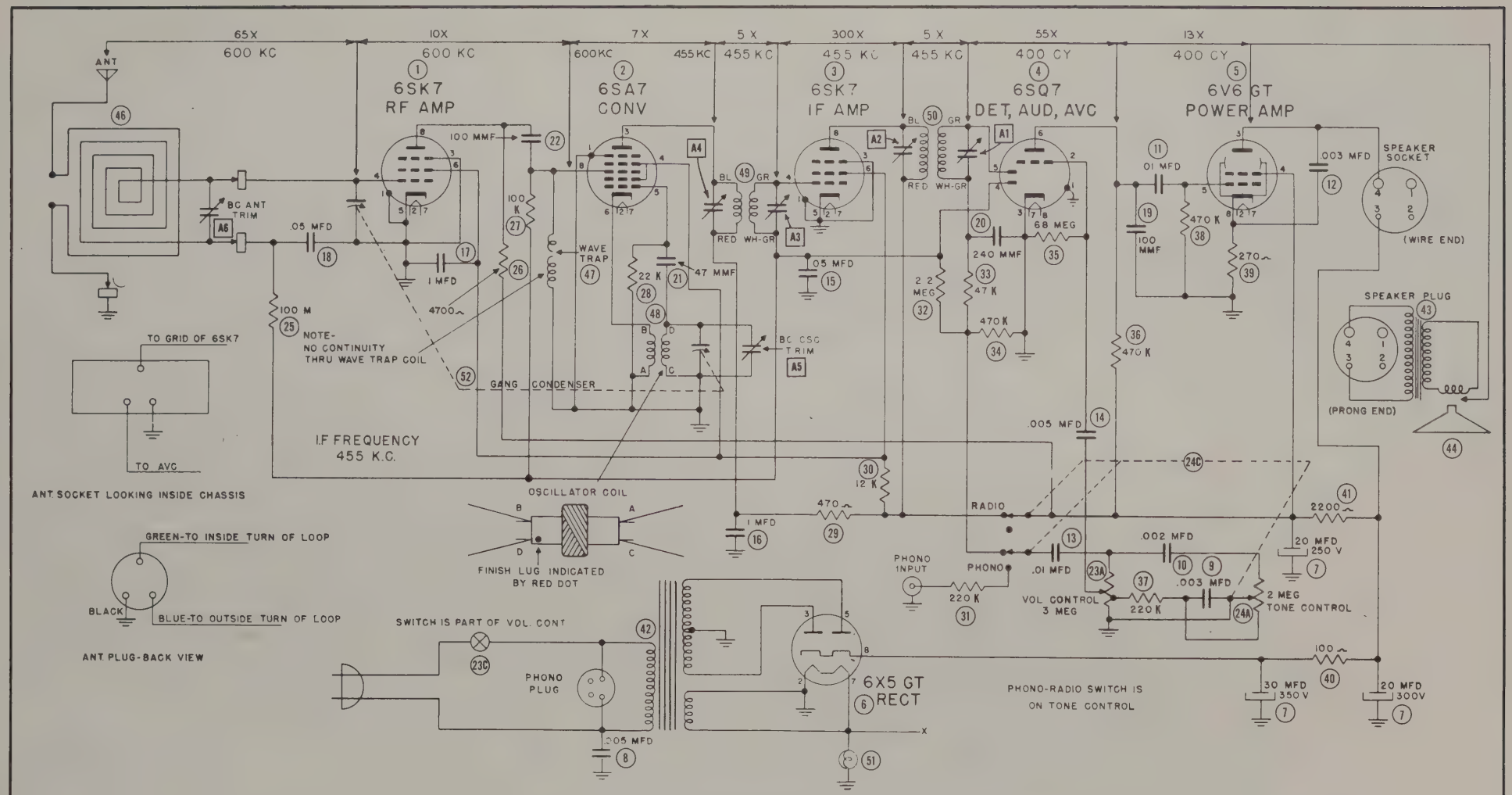
ITEM No.	PART NAME	FARNSWORTH PART No.	NOTES
52	Tuning Cap.	15136	2 Gang Variable Cap.
A6	Trimmer Cap.	26032	Antenna Adj.
	Dial Pointer	07348	
	" Glass	31318	EC-260, EK-264
	" "	31280	EK-262, EK-263, EK-265
	" Escutcheon	59211	EC-260, EK-264
	" "	59199	EK-262, EK-263, EK-265
	" Background	58006	EK-262, EK-263, EK-265
	" "	58039	EC-260, EK-264
	Knob	59134	EC-260, EK-262, EK-263WL, EK-264WL, EK-265
	"	59243	EK-263BL, EL-264BL


TUNING CONDENSER IS IN FULL MESH POSITION WHEN TUNING KNOB IS TURNED CLOCKWISE, POINTER MOVES FROM LEFT TO RIGHT, DRIVE DRUM TURNS CLOCKWISE.
TUNING SHAFT
2 TURNS

DIAL STRINGING

CHASSIS—BOTTOM VIEW





NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.75V.DC	0V.	65V.DC	6.4V.AC	158V.DC
2	6SA7	0V.	0V.	187V.DC	65V.DC	-.4V.DC	0V.	6.4V.AC	-.35V.DC
3	6SK7	0V.	0V.	0V.	-.85V.DC	0V.	65V.DC	6.4V.AC	187V.DC
4	6SQ7	0V.	-.6V.DC	0V.	-.85V.DC	-.4V.DC	78V.DC	6.4V.AC	0V.
5	6V6GT	0V.	6.4V.AC	232V.DC	187V.DC	0V.	0V.	0V.	9.2V.DC
6	6X5GT	0V.	0V.	227V.AC	0V.	227V.AC	0V.	6.4V.AC	245V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	2.7 MEG.	0Ω	112KΩ	.2Ω	105Ω
2	6SA7	0Ω	0Ω	100KΩ	112KΩ	21KΩ	.5Ω	.2Ω	2.7 MEG.
3	6SK7	0Ω	0Ω	0Ω	2.5MEG.	0Ω	112KΩ	.2Ω	100KΩ
4	6SQ7	0Ω	5MEG.	0Ω	2.5MEG.	480KΩ	570KΩ	.2Ω	0Ω
5	6V6GT	INF.	.2Ω	100KΩ	100KΩ	400KΩ	INF.	0Ω	240Ω
6	6X5GT	INF.	0Ω	152Ω	INF.	143Ω	INF.	.2Ω	100KΩ

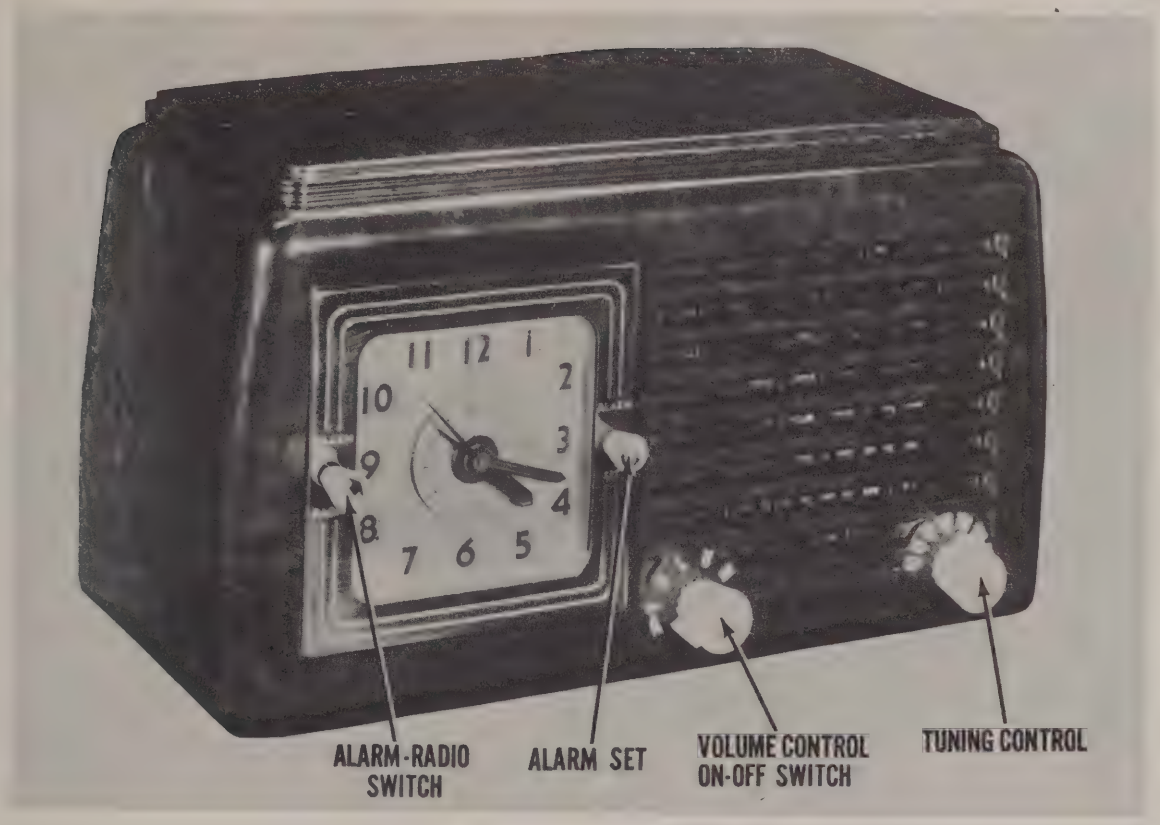
467-15

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



GENERAL ELECTRIC
MODEL 50

GENERAL ELECTRIC
MODEL 50

GENERAL ELECTRIC MODEL 50

TRADE NAME	General Electric Model 50
MANUFACTURER	General Electric Co., Electronics Dept., Bridgeport, Conn.
TYPE SET	4 Tube AC Operated TRF Receiver with Electric Alarm Clock
TUBES (FOUR)	Types, 12SG7 RF Amp., 12SQ7 Det.-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .245 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
100 MMF.	High side to ant. lead. Low side to B-.	1620KC	Tuning shaft fully clock-wise.	Across voice coil	A1,A2.	Adjust for maximum output.
100 MMF.	High side to ant. lead. Low side to B-.	580KC	Tune for maxi-mum output.	"	A3.	Rock tuning control and adjust for maximum output. Recheck A1 and A2 at 1620KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA GEN. ELECT. PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SG7	12SG7	8BK	
2	Det.-AF	12SQ7	12SQ7	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	35W4 used in later production.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GEN. ELECT PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	RCE-031	FP306	DY40-30-150/20-25	EL-343	AF86D4A	UP6CJ41	■ Filter
B	30	150							▲ "
C	20	25							Cath. Bypass
6	.05	600	RCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	Line Filter
7	.02	600	RCC-041	TP412	S-6-02	TC-12	684-02	DT6S2	50L6 Plate Bypass
8	.005	600	RCC-039	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
9	.005	600	UCC-039	TP408	S-6-005	TC-25	684-005	DT6D5	" "
10	.05	600	UCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
11	.05	600	UCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	Line Isolating
12	220	500	UCU-536	MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
13	220	500	UCU-536	MC237	M0.5-32	1FM-32	1468-0002	5W5T2	RF Bypass Vol. Cont.
14	150	500	UCU-532	MC236	M0.5-315	1FM-315	1468-00015	5W5T15	RF Coupling
15	430	500	UCG-543						" "
16A	22	500	UCU-512	MC220	M0.5-42	MS-42	1468-00002	5W5Q2	" "
B	150	500	UCU-532	MC236	M0.5-315	1FM-315	1468-00015	5W5T15	" " *

* Used in some models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GEN. ELECT. PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	1		MK402	D13-137	AM-63-Z	Volume Control M73J598-1
B	Shaft			Not Req.	E	KSS-3	Attach to 17A per instructions

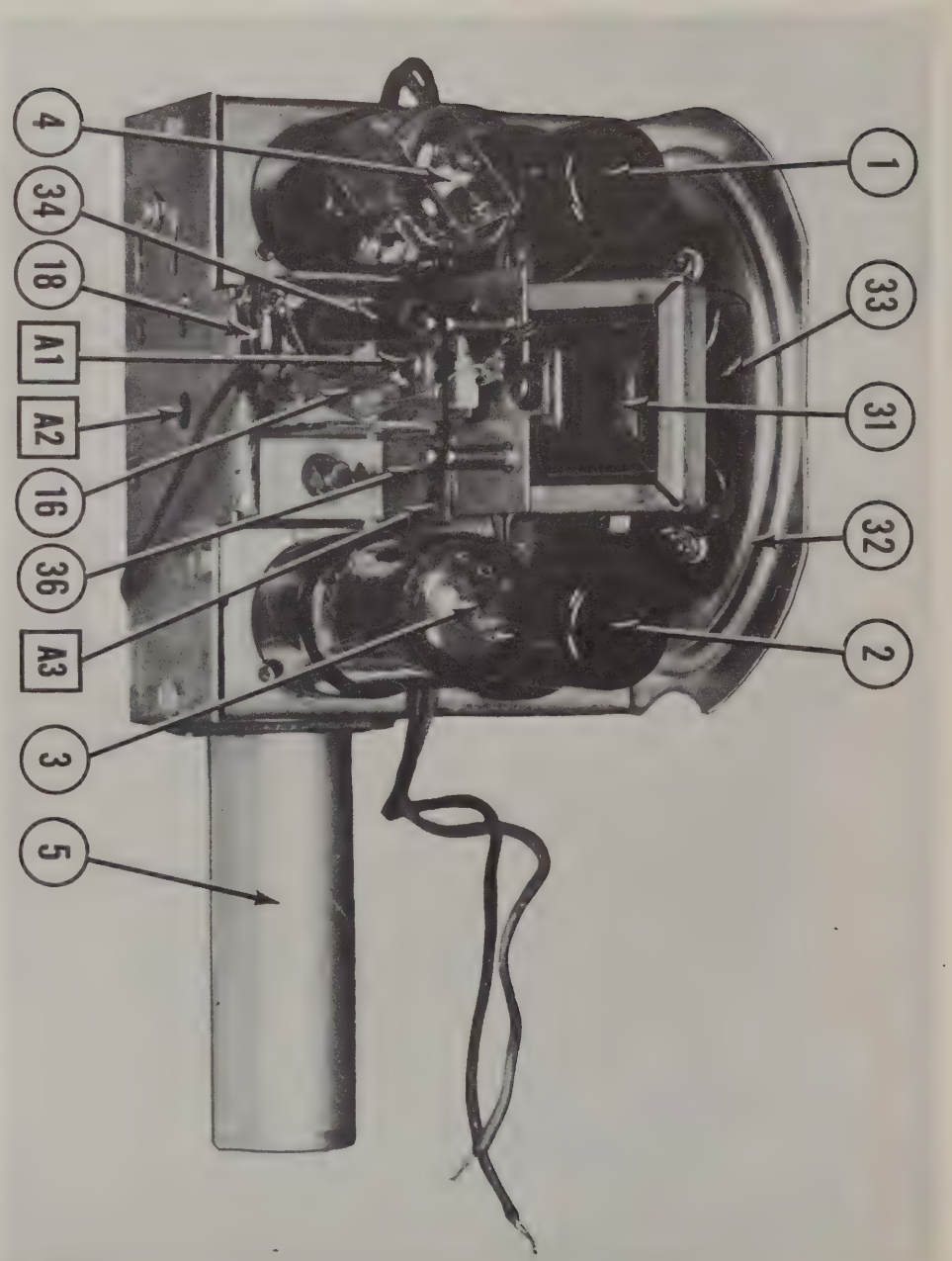
RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GEN. ELECT. PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
18	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Ant. Loading
19	220Ω	½	URD-033	BW-½-220	Red-Red-Br. RF Grid
20	39Ω	½	URD-015	BW-½-39	Or.-White-Blk. RF Cathode
21	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. RF Cathode
22	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or. Diode Filter
23	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
25	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
26	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. Output Grid
27	150Ω	½	URD-029	BW-½-150	Br.-Grn.-Br. Output Cathode
28	2200Ω	1	URE-057	BTA-2200	Red-Red-Red Filter
29	18Ω	1	RRW-008	BW-1-18	Br.-Gray-Blk. Surge Limiter
30	22Ω	1	RRW-003	BW-1-22	Red-Red-Blk. Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA GEN. ELECT. PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.		INSTALLATION NOTES
31A	2000Ω	3.4Ω	150Ω	.4Ω		A-3876†	T-22S45†		†Drill one new mounting hole.
B					RTO-022				Used in later production

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

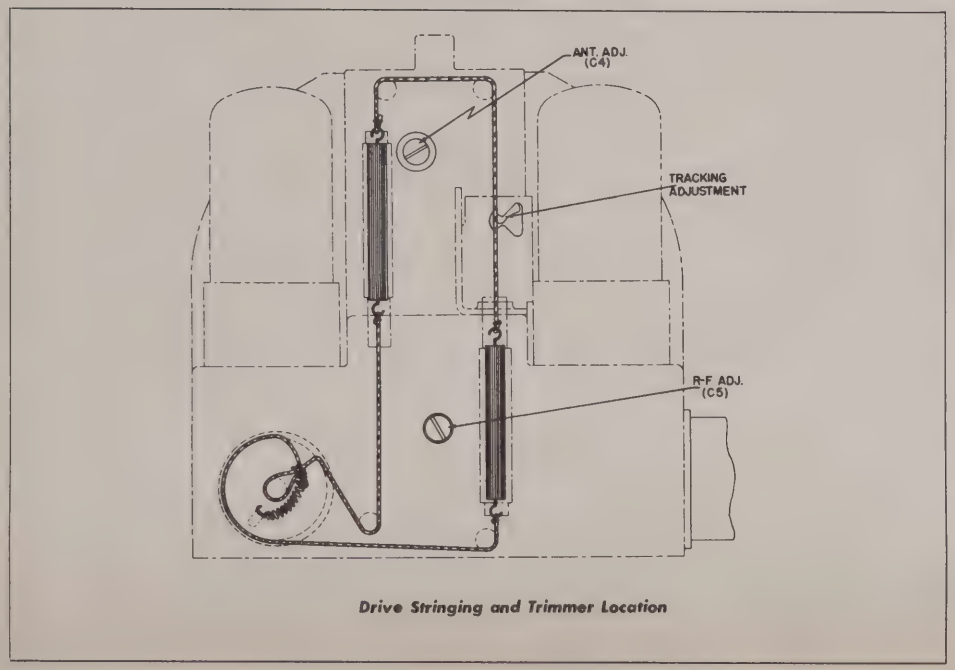
ITEM No.	RATINGS		REPLACEMENT DATA GEN. ELECT. PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
32	IM	3.4Ω	U0P-405			
	CONE DIA.	VC DIA.				
33	4"	1/2"	U0X-009			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GEN. ELECT. PART No.	MEISSNER PART No.	INSTALLATION NOTES
34	Ant. Coil		3Ω	RLA-005		Items 34, 35 ganged together and slug tuned
35	RF Coil		3Ω	RLA-005		

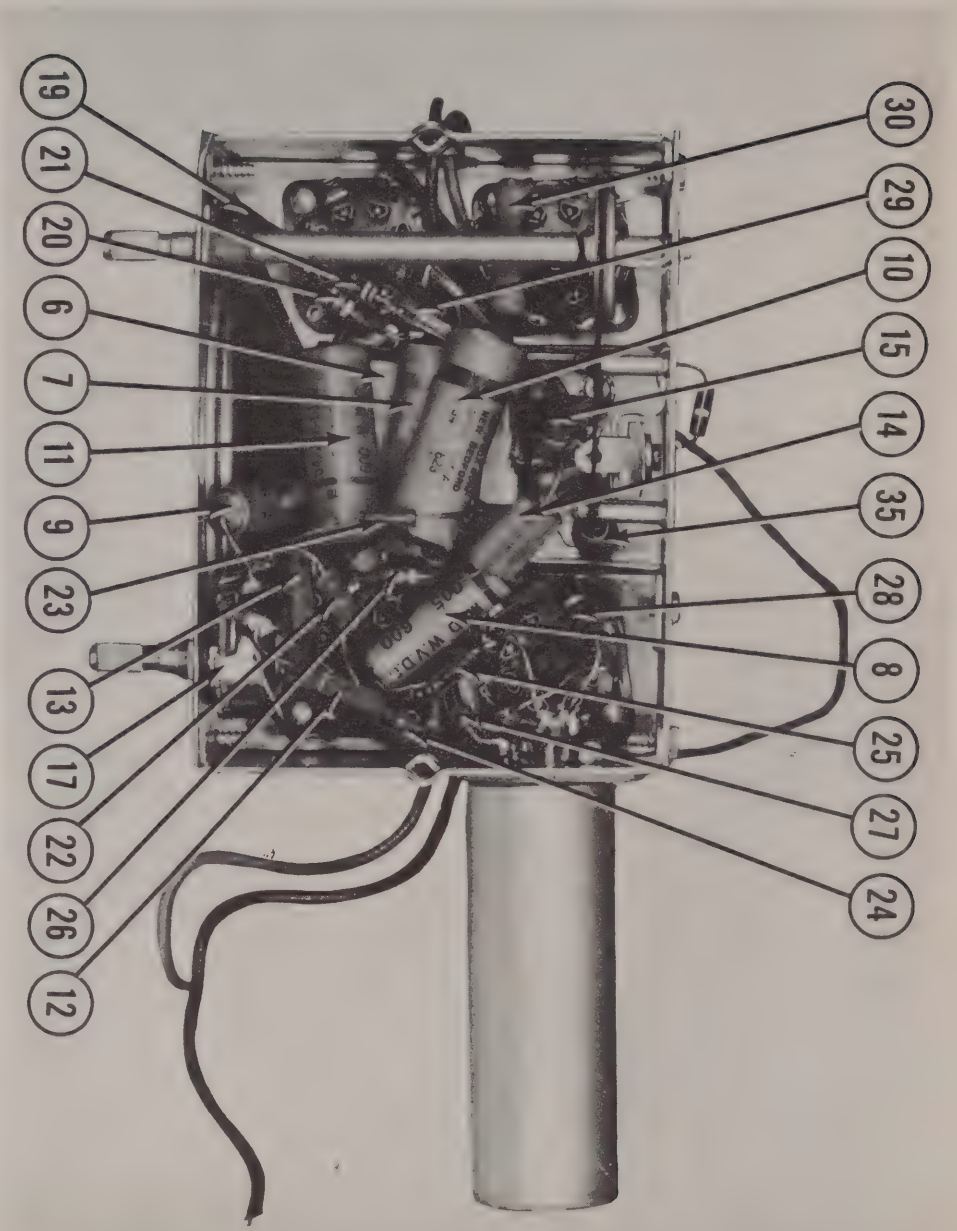
MISCELLANEOUS

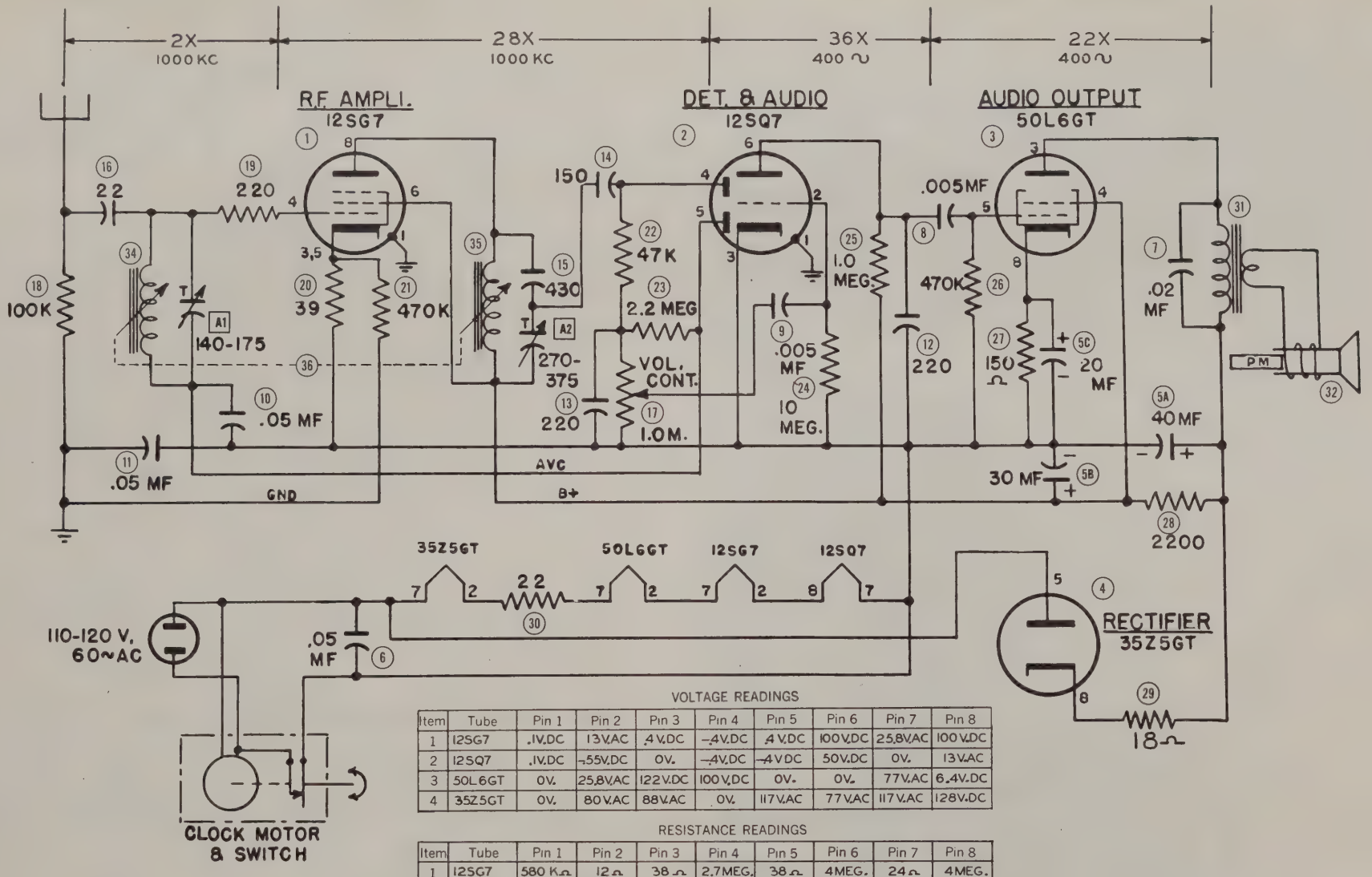
ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
36	Tuner Assby.	RHJ-001	
	Trimmer Cap.	RCY-007	Ant. Adj. 140-175 MMF.
	" "	RCY-008	RF Adj. 270-375 MMF.
	Cabinet	RAU-009	Plastic
	Knob	RDK-028	
	Clock	RZC-001	
	Dial	XC60X707	
	Knob-Bronze	XC3X49	Time Set Shaft
	" -Ivory	XC4X5	Alarm Set
	" - "	XC40X74	Switch



Drive Stringing and Trimmer Location

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	.1V.DC	13V.AC	.4V.DC	-.4V.DC	.4V.DC	100V.DC	25.8V.AC	100V.DC
2	12SQ7	.1V.DC	-.55V.DC	0V.	-.4V.DC	-.4V.DC	50V.DC	0V.	13V.AC
3	50L6GT	0V.	25.8V.AC	122V.DC	100V.DC	0V.	0V.	77V.AC	6.4V.DC
4	35Z5GT	0V.	80V.AC	88V.AC	0V.	117V.AC	77V.AC	117V.AC	128V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	580 KΩ	12Ω	38Ω	2.7MEG.	38Ω	4MEG.	24Ω	4MEG.
2	12SQ7	580 KΩ	6 MEG.	0Ω	850 KΩ	2.7MEG.	5MEG.	0Ω	12Ω
3	50L6GT	INF.	24Ω	4MEG.	4MEG.	460 KΩ	INF.	69Ω	135Ω
4	35Z5GT	INF.	90Ω	92Ω	INF.	120Ω	69Ω	120Ω	4MEG.

467-16

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

LYRIC
MODELS 546T, 546TY

LYRIC
MODELS 546T, 546TY

LYRIC MODEL 546T, 546TY

TRADE NAME	Lyric Model 546T, 546TY
MANUFACTURER	The Rauland Corp., 4245 Knox Ave., Chicago 41, Ill.
TYPE SET	AC - DC Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50A5 Power Output, 35Z5GT Rectifier.
POWER SUPPLY	100 - 125 Volts AC - DC
TUNING RANGE—BROADCAST	535-1620KC RATING .225 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to stator lug of rear section of variable. Low side to B-.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD to reduce excessive hum modulation.
	Loop	1600KC	1600KC	"	A5	Connect output of signal generator to a loop of wire approx. one foot in diameter, located about one foot from the receiver loop. Adjust for maximum output.
	"	1400KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		LYRIC PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	LYRIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	30	150	CE-806F	3N533	DSB-40+30-150/20-25	EL-332	PRSA150-40-40	EZ32150	Filter - Red
B	30	150							" - Orange
C	20	25					PRS25-25		Cath. Bypass - Blue
7	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
8	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	50A5 Plate Bypass
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
12	.002	400		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
13	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating*
15	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
16	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Vol. Cont.
17	100	500		MC235	M0.5_31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
18	3	500							RF Coupling
19	10	500		MC215	M0.5-41	MS-41	1468-00001	5W5Q1	Ant. Coupling

*Not used in all models.

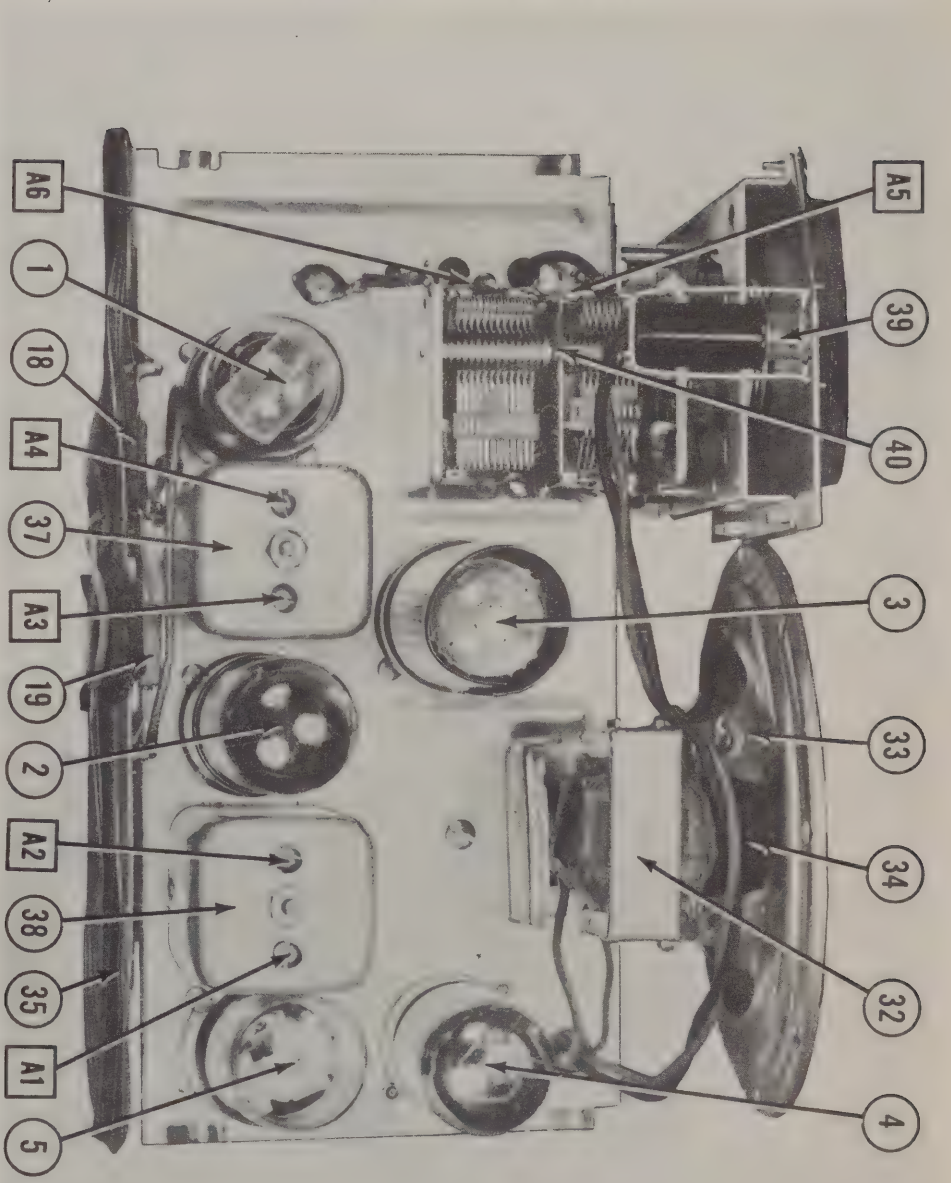
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	LYRIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
20A	2 Meg.	1	RP-205E	MK403	D13-139	AM-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	LYRIC PART No.	IRC PART No.	
21	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AVC Network
22	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
23	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	680KΩ	½		BTS-680K	Blue-Gray-Yl. Volume Control Shunt
25	5.1 Meg.	½		BTS-5.6 Meg.	Grn.-Br.-Grn. 1st AF Grid
26	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
27	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Filter
28	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
29	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
30	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
31	100Ω	½		BW-½-100	Br.-Blk.-Br. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		LYRIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
32	2000Ω	3.5Ω	210Ω	1Ω	Part of US-0036	A-3876†	T-22S45†		†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			LYRIC PART No.	JENSEN PART No.		
33	FIELD PM	VC IMP. 3.5Ω	US-0036	ST-105 Mod. P5-X		
34	CONE DIA. 4-3/4"	VC DIA. 1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE - ORDER FROM MANUFACTURER			

R F COILS

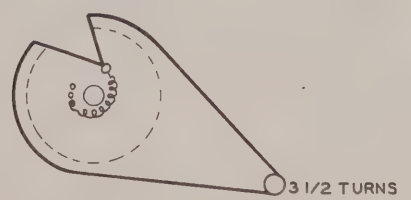
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	LYRIC PART No.	MEISSNER PART No.	
35	Loop Ant.		1.5Ω	VC-0444		
36	Osc. Coil	.8Ω	5Ω	LO-0089	14-1040	
37	Input IF	20Ω	19.5Ω	LR-0007	16-6658	
38	Output IF	19.5Ω	19.5Ω	LR-0008	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					LYRIC PART No.		
39	Bayonet	6-8	0.15	Brown			Type 47

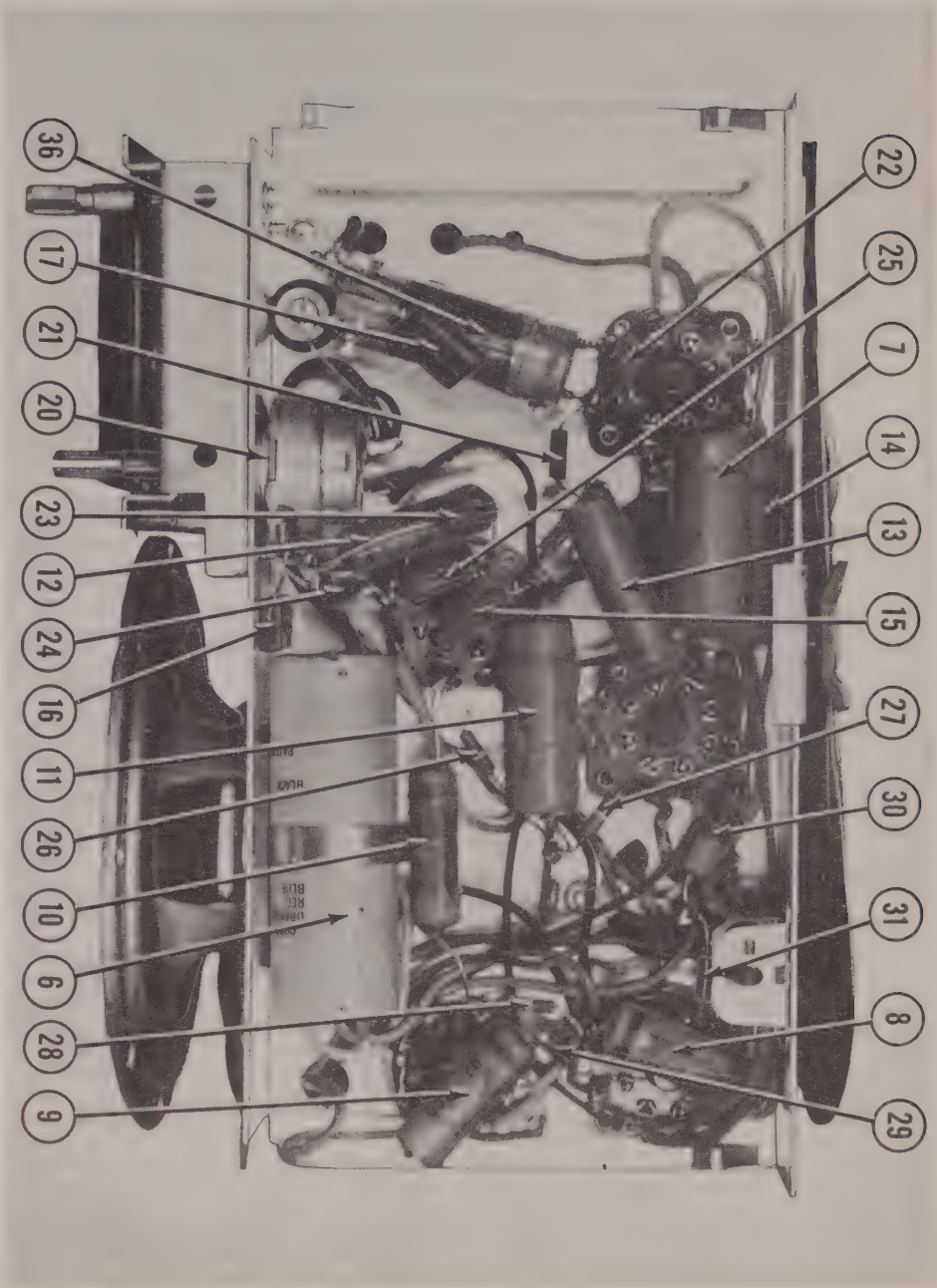
MISCELLANEOUS

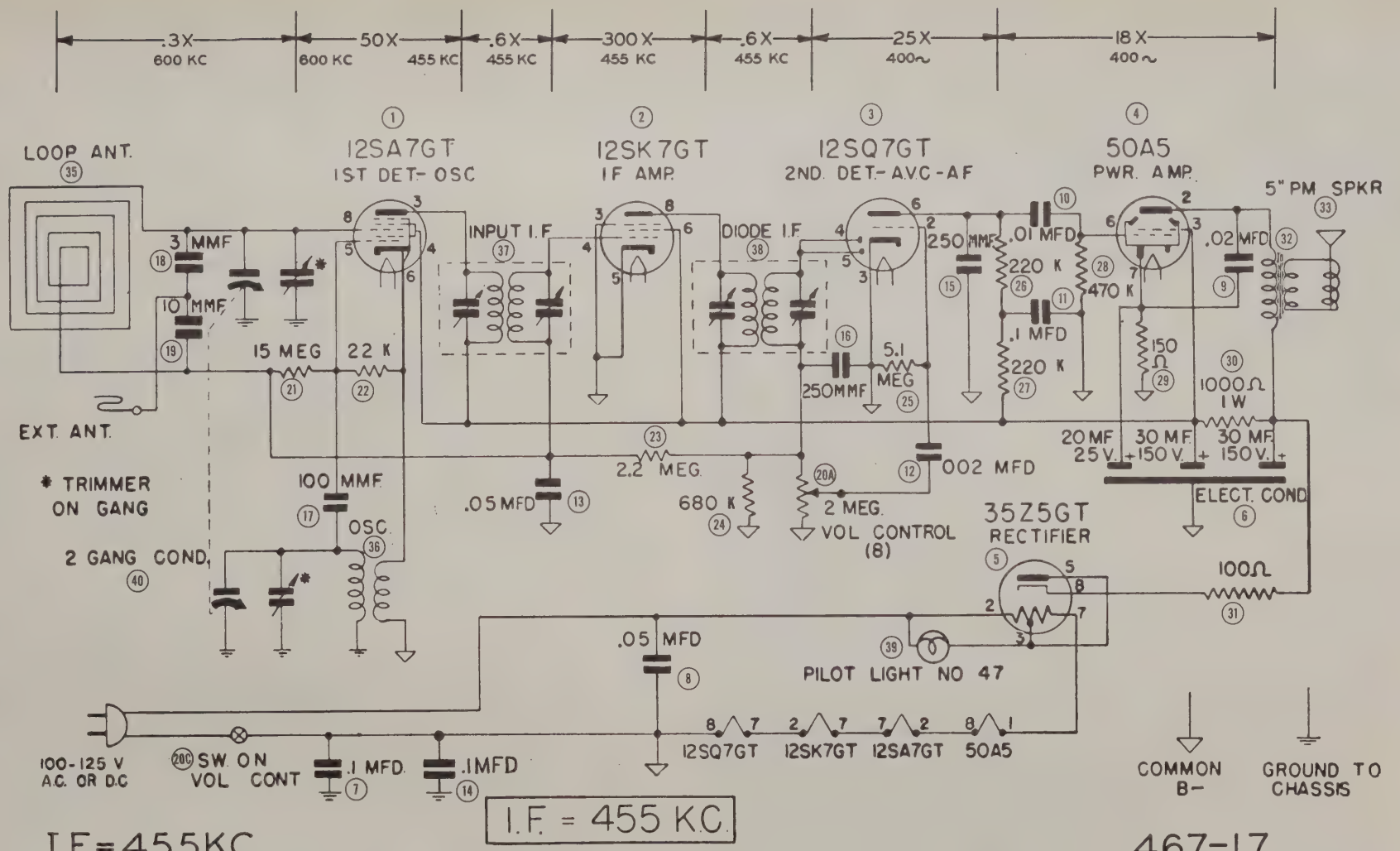
ITEM No.	PART NAME	LYRIC PART No.	NOTES
40	Tuning Cap.	CV-517	2 Gang Variable Cap.
	Cabinet	VC-0321	White
	"	VC-0456	Walnut
	Back	QP-0226	White
	"	QP-0220	Walnut



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





I.F. = 455 KC

IF=455KC

467-17

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	36.5VAC	80V.DC	80V.DC	-9 V.DC	0V.	24 VAC	-6 V.DC
2	12SK7GT	0V.	12 V.AC	0V.	-.6V.DC	0 V.	80V.DC	24 V.AC	80 V.DC
3	12SQ7GT	0V.	-.55V.DC	0V.	-.65V.DC	-.65V.DC	53V.DC	12V.AC	0V.
4	50A5	88V.AC	95V.DC	80V.DC	80V.DC	80V.DC	0V.	4.4V.DC	36.5VAC
5	35Z5GT	0V.	117V.AC	113VAC	0V.	113VAC	0V.	88V.AC	107V.DC

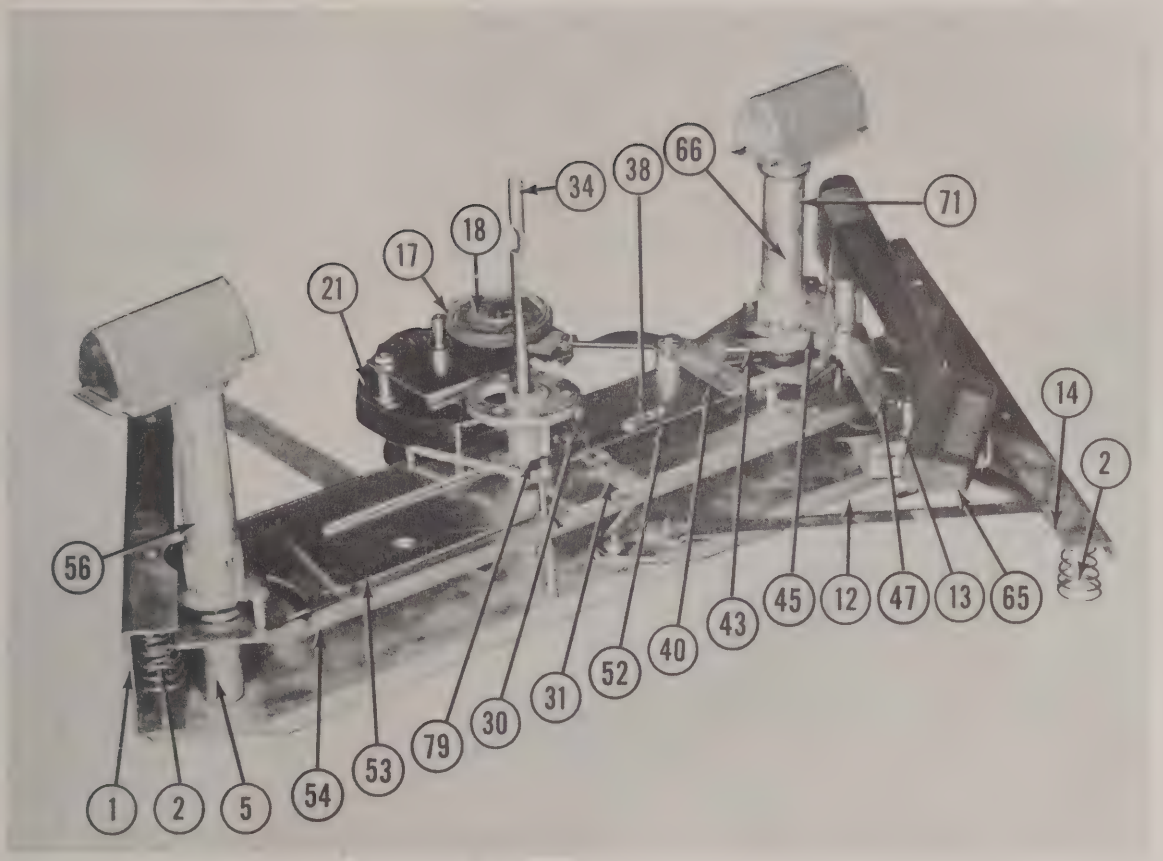
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	INF.	36Ω	100 KΩ	100 KΩ	19 KΩ	.5 Ω	24 Ω	2.5 MEG.
2	12SK7GT	INF.	12Ω	0Ω	2.5MEG.	0Ω	100KΩ	24Ω	100 KΩ
3	12SQ7GT	INF.	5 MEG.	0Ω	590KΩ	590KΩ	540KΩ	12Ω	0Ω
4	50A5	80Ω	100KΩ	100 KΩ	100KΩ	100 KΩ	430KΩ	130Ω	36Ω
5	35Z5	INF.	105Ω	103Ω	0Ω	103Ω	0Ω	80Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MAGUIRE MODEL ARC-1 AUTOMATIC RECORD CHANGER

LIST OF MANUFACTURERS USING MAGUIRE RECORD CHANGER—NAME AND MODEL NUMBERS

Manufacturer	*Name of Equipment*	*Model Numbers*
Algene Radio Company 305 Throop Avenue Brooklyn, N. Y.	Portable Combo	Combo No. 1
Bedford Radio Mfg. Co. 1619 Bedford Avenue Brooklyn, N. Y.	Bedford	CAR-44 R-66
Bogue Electric Company 52 Iowa Avenue Patterson, N. J.	Homease	
Boro Hall Music Co., Inc. 137 Pearl Street Brooklyn, N. Y.	Leetone	AP-100
Dynamic Electronics 37 West 57th Street New York, N. Y.	Custom Built	
Globe Electronics, Inc. 225 West 17th Street New York, N. Y.	Globe	38P 6AP1
The Harold Company 96 Fifth Avenue New York, N. Y.	Wavemaster	103 103AC RC1A
Industrial Electronics Corp. 505 Court Street Brooklyn, N. Y.	Simplon	CA-5
Lavoie Laboratories Morganville, N. J.	Sterling	1284P
Lemarc Products, Inc. 7 Boerum Street Brooklyn, N. Y.	Lemarc	RC-1
Nelge Electric Limited 35-37 Montgomery Street Jersey City, N. J.	Nelgetone	E6 E16
Philtone Electronic Co., Inc. 35 Fifth Avenue Brooklyn, N. Y.	Philtone Charmtone	P6
Redi-Electric Co. 141 West 24th Street New York, N. Y.	Wire Record Changer	AR-100
Sugar Electric Prod. Co. 814 Tenth Avenue New York, N. Y.	Sterling Electric	C-303 A-101 D-404
Televox, Inc. Mount Vernon, N. Y.	Televox	MC1 MC2
Union Electronics Corp., 38-01 Queens Boulevard Long Island City, N. Y.	Union	101
Univox Company 83 Murray Street New York, N. Y.	Univox Rambler	MC-46P
Viewtone Company 203 East 18th Street New York, N. Y.	Viewtone Aristocrat	RC-101 R1C-201

THE FOLLOWING PARTS MUST MOVE FREELY:

a. Slide (53) check friction by removing turntable and turntable hub and relieve pressure produced by springs. Slide should then move freely along top mounting plate (54). If slide binds, clean off any dirt that is present and check that slide or top plate is not bent. Relubricate between slide and top plate, and slide shafts with Houghton's Stayput No. 320 oil. If not available use SAE 30 or 40 motor oil.

b. Automatic stop lever (40)—remove friction washer (41) and see that lever does not bind.

c. Cranks (32 and 39) in support posts (28 and 51)—check that cranks are not bent. Pushers (80 and 77) should be flush with record guides (58 and 68) when machine is out of cycle. Right pusher, crank, and pusher control lever must move freely when slide is ½ way through cycle.

d. Pickup lifting lever (8)—check for binding in bearing.

e. Pickup actuating lever (50)—check for binding in bearing.

f. Pickup return lever (43)—check for binding in bearing.

g. Trip lever must move freely.

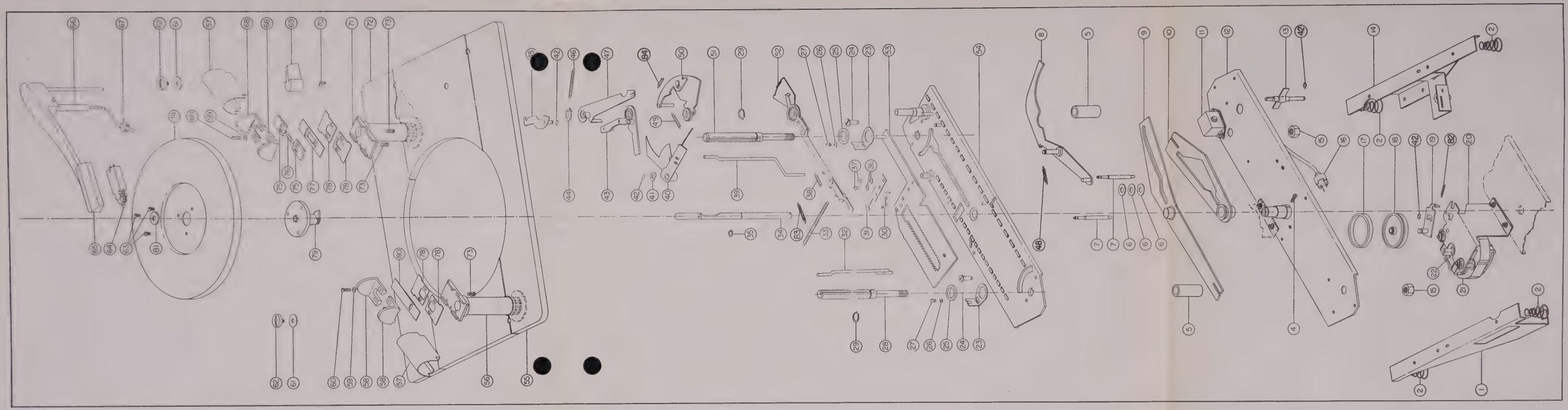
h. Dog must fall freely.

i. Idler plate must slide freely, wheel must rotate freely.

j. Turntable hub—be sure cam does not rub slide. If necessary add a shim washer.

k. Motor must turn freely.

In cases where levers are controlled by springs remove springs before checking for binding.



CYCLE OF OPERATION

CAUTION: In any adjustment which requires that the turntable be removed, be careful not to strike the trip lever (52) or dog (30), either when removing or replacing turntable.

Remove cover plates (55 and 72) and turntable (74). The Changer can then be rotated manually through a change cycle by pushing the Start-Reject knob and rotating the turntable hub (79) clockwise by hand.

FUNCTION	EXPLANATION
Turn Record Supports to 10″ or 12″.	Record support posts (56 and 71) automatically align themselves by means of index springs (23).
Place Records on Posts.	Records rest on support shelves (78) in position to be separated.
Turn the Start-Reject Knob Clockwise.	Pickup arm (65) rises, releasing pressure on switch (11); circuit of turntable motor (21) is closed and motor starts. Tripping link (47) is pushed in and moves dog trip lever (52) permitting dog (30) to fall. Cam on turntable hub (79) pushes dog (30), moving slide (53) forward and engaging gear.
Pickup Arm (65) Rises.	Incline on slide (53) rotates pickup lifting lever (8) through stud, raising pickup arm (65).
Bottom Record Is Separated.	Left hand pusher (80) pushes record off shelf (78) on to spindle shelf (34). Record pushes right hand pusher (77) which moves crank (39), rotating automatic stop lever (40).

FUNCTION	EXPLANATION
Bottom Record Is Separated. (Cont.)	Right hand pusher (77) pushes record off spindle shelf (34) on to turntable (74).
Pickup Arm (65) Moves in.	Pickup actuating lever (50) rotates and latch engages pin on pickup return lever (43). Slide (53) starts back rotating pickup arm (65) to 10″ or 12″ position.
Pickup Arm Lowers Stylus on to Record.	Pickup return lever (43) moves against index stop lug on index plate (71) to insure correct landing position. Pickup lifting lever (8) rotates counter-clockwise lowering pickup arm; this frees pickup latch (50) allowing arm to feed into music. Pushers (77 and 80) return to original position permitting next record to rest on record shelves (78). Slide (53) moves dog (30) along edge of dog trip lever (52). Dog trip lever (52) raises dog (30) permitting cam on turntable hub (79) to revolve without contacting dog (30).
Pickup Arm Rises at End of Record.	Stylus enters fast spiral at center of record and moves in at rate of 1/8″ or more per turntable revolution. Pickup lifting pin (part of 65) moves friction finger (part of 52). Friction finger moves dog trip lever (52). Vertical cam on turntable hub (79) drives trip lever (52) back once per revolution. When the

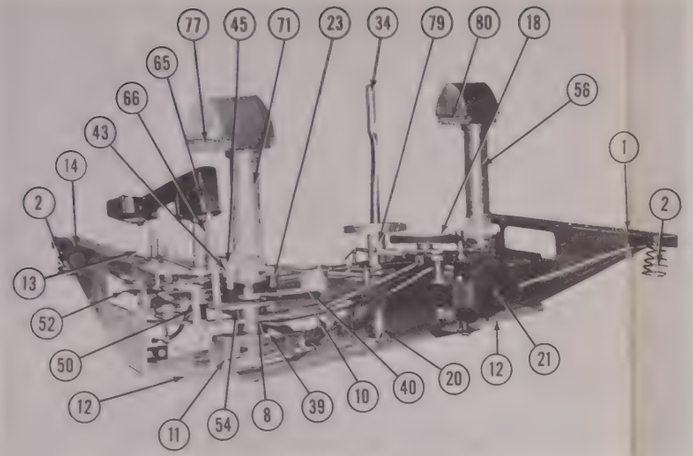
FUNCTION	EXPLANATION
Pickup Arm Rises at End of Record. (Cont.)	pickup (65) moves in at a rate exceeding 3/32″ per revolution, the trip lever will move far enough to allow the dog (30) to fall. Dog (30) drops in path of cam on turntable hub (79). Cam on hub (79) pushes slide (53) into gear. Incline on slide (53) rotates pickup lifting lever (8) by means of stud.
Next Record Drops on to Turntable.	Left hand pusher (80) moves next record on to spindle shelf. Record pushes right hand pusher, which through crank rotates automatic stop lever (40) out of path of pickup actuating lever latch (part of 50). Pickup actuating lever (50) rotates pickup arm outwards. Right hand pusher (77) moves record off spindle shelf.
Automatic Stop.	After last record pickup arm rises as above. Left hand pusher (80) moves out. Absence of record prevents actuation of right hand pusher (77). Automatic stop lever (40) remains in path of pickup return lever latch (43). Pickup arm is lowered not on to record but on to Start-Reject. Pickup arm stud (part of 65) opens turntable motor switch (11) shutting off machine.

LIST OF REPLACEABLE PARTS

Assem. No.	Name of Part	Maguire's Dwg. No.
1	Left hand cover support assembly	C-14050-2
2	Suspension spring	A-20176-1
3		
4	Screw (for clamping spindle) No. 6-32 x 5/16″ fil. hd.	A-10109-64
5	Spacer	A-20177-2
6	Turntable thrust washer—.01″	A-20178-3
	Shim washer—.005″	A-20178-7
	Shim washer—.010″	A-20178-8
7	Slide latch shaft	A-20171-1
8	Pickup lifting lever assembly	A-14048-1
9	Left pusher control lever assembly	B-14051-1
10	Right pusher control lever assembly	B-14052-1
11	Switch assembly	C-14271-1
12	Bottom mtg. plate assembly	C-14044-1
13	Knob shaft assembly	A-14047-1
14	Right hand cover support assembly	C-14050-1
15	Hex. nut—7/16″	A-10209-1
16	Motor plug assembly	A-20638-1
		A-20638-2
17	Idler tire	A-40007-1
18	Idler wheel assembly	A-14038-1
19	Idler plate assembly	A-14079-1
20	Motor mounting bracket	C-20285-1
21	Motor	DL-10542-503
22	Motor spring bushing—60 cycle	A-27014-1
	50 cycle	A-27014-2
23	Index spring	A-20173-1
24	Stop screw	A-20180-1
25	Spacer (for stop screw)	A-20177-3

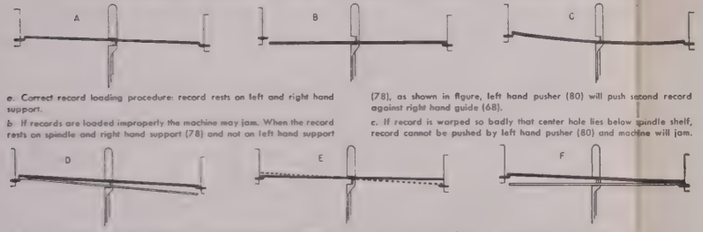
Assem. No.	Name of Part	Maguire's Dwg. No.
26	Lock washer—No. 4	A-10145-11
27	Screw—bd. hd. No. 4-40 x 3/16″	A-10124-32
28	Post left hand	B-20165-1
29	Retaining ring for posts	A-20184-3
30	Dog	A-20135-1
31	Dog cover	A-20136-1
32	Record pusher crank, L. H.	A-20169-2
33	Slide latch shaft spring	A-20213-1
34	Spindle	A-20172-1
35	Retaining ring (for spindle)	A-20184-1
36	Lock washer (for dog) No. 4	A-10145-11
37	Dog screw, bd. hd. No. 4-40x3/16″	A-10124-32
38	Trip lever spring	A-20199-1
39	Record pusher crank, R. H.	A-20169-1
40	Stop lever assembly	A-14041-1
41	Stop lever washer	A-20178-5
42	Hairpin retainer	A-20183-1
43	Pickup return lever assembly	A-14045-1
44	Retaining ring (for pickup bearing)	A-20184-2
45	Starting lever assembly	A-14342-1
46	Tripping link spring	A-20211-1
47	Tripping link assembly	A-14341-1
48	Lifting lever spring	A-20216-1
49	Actuating lever spring	A-20215-1
50	Pickup actuat. lever & latch assem.	A-14046-1
51	Post right hand	B-20165-2
52	Trip lever assembly	C-14039-1
53	Slide assembly	C-14040-1
54	Top plate assembly	C-14043-1
55	Front cover plate	D-20179-1
56	Record shelf assembly, L. H.	A-14042-2
57	Record post cap	A-20170-1
58	Record guide, L. H.	A-20166-2

Assem. No.	Name of Part	Maguire's Dwg. No.
59	Record guide washer	A-20178-2
60	Rec. guide screw No. 4-40 x 7/16″	A-10124-36
61	Cover plate washer	A-20178-4
62	Cover plate screw	A-20181-1
63	Turntable screws	A-10124-63
64	Pickup cartridge—ARC-1CB-11	A-28178-1
	ARC-1CA-11	A-28178-2
	ARC-1DB-11	A-28178-3
	ARC-1FA-11	A-28174-1
	ARC-1FB-11	A-28174-2
	ARC-1A, ARC-1B	A-20609-1
65	Pickup arm assem., less cartridge	C-14356-4
66	Pivot shaft and collar assembly	A-14277-1
67	Loudspeaker plug	A-10303-4
68	Record guide, R. H.	A-20166-1
69	Knob assembly	A-14056-1
70	Knob spring	A-15082-1
71	Record shelf assembly, R. H.	A-14042-1
72	Back cover plate	D-20179-2
73	Rec. post cap screw No. 4-40 x 3/16″	A-10124-32
74	Turntable	C-20161-1
75	Plunger	A-20168-1
76	Plunger spring	A-20214-1
77	Right hand pusher	A-20167-1
78	Record shelf	A-20163-1
79	Hub assembly	A-15053
80	Left hand pusher	A-20164-1
81	Washer 13/16″ x 9/32″	A-20178-10
82	Idler spring	A-20198-1
83	Slide latch shaft spring	A-20216-1
84	Latch spring	A-20192-1



TROUBLES AND ADJUSTMENTS

RECORD JAMMING CAUSED BY FAULTY RECORD LOADING OR ODD-SIZED RECORD



a. Correct record loading procedure: record rests on left and right hand support.

b. If records are loaded improperly the machine may jam. When the record rests on spindle and right hand support (78) and not on left hand support (78), as shown in figure, left hand pusher (80) will push second record against right hand guide (68).

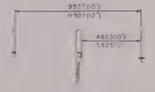
c. If record is warped so badly that center hole lies below spindle shelf, record cannot be pushed by left hand pusher (80) and machine will jam.

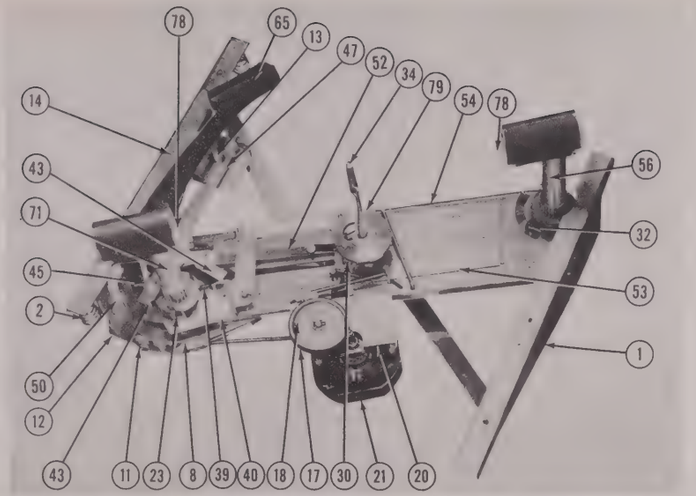
d. If record is loaded below right hand support (78) it will not be dropped from spindle shelf.

e. If record is oversized it may not fit between guides (58 and 68) or right hand pusher (77) may not move far enough to allow record to clear left hand shelf (78).

f. If center hole of record is undersized, record will be pinned against spindle. If second record is undersized or if cycle is very slow, second record will drop in front of right hand pusher (77) and machine will jam. This should not occur if cycle speed is more than approximately 40 rpm (normal speed is approximately 80 rpm). Cycle speed is normally 2-4 rpm less than no load speed.

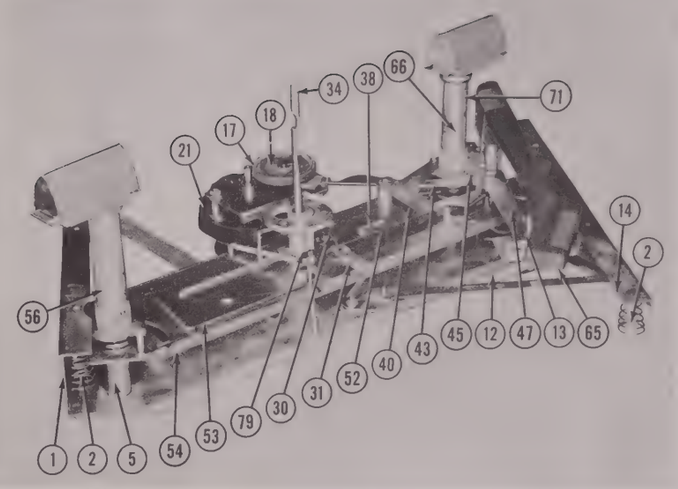
NOTE: Edges of Records badly damaged or highly irregular will also cause jamming.

TROUBLE	CAUSE	REMEDY
Record Jamming Can be Caused by Friction.	1. Friction in right hand pusher (77), plunger (75), etc.	NOTE: Record will not drop from left hand shelf to spindle shelf. When machine is about half way through cycle right hand pusher should move in and out freely. 1. Clean any dirt. 2. Check if crank is bent. 3. Check alignment of record guide.
	2. Friction in pusher control (10) or stop lever (40).	4. Retaining ring holding crank may be turned. Crank should fit in gap. 1. Clean out any dirt. 2. Check for bent parts.
	3. Record posts or guides out of alignment (56, 71, 58, 68).	1. Align and space record guides (58 and 68) as in figure.  A line of sight can be drawn from center of record guide through spindle to center of opposite record guide when posts and spindle are correctly aligned. NOTE: Make sure notch on spindle is in right place and spindle shelf is at correct height, i.e., record is horizontal when resting on spindle and right shelf.
Slow, Stalling or Failure to Start.	1. On-off motor switch.	1. Disengage idler (18) and lift pickup arm off switch (11). 2. Check wiring to and from switch. 3. Replace switch.
	2. Slippage between idler (18) and turntable (74).	1. When turntable is stopped manually, motor should stop (with power on). If motor does not stop, clean oil from turntable and the idler wheel with carbon tetrachloride.



TROUBLE	CAUSE	REMEDY
Slow, Stalling or Failure to Start. (Continued)	3. Idler does not contact turntable firmly.	1. Idler plate (19) should not hit either side of T slot in motor bracket when wheel is touching turntable. Bend motor bracket if necessary. 1. Push idler plate back so tire does not touch turntable. If turntable does not spin freely, lubricate; look for a bent spindle. Make sure hub does not drag on slide.
	4. Turntable bearing stiff.	1. Check lubrication. 1. Motor bearings are self-aligning type; if motor turns stiffly by hand, tap motor lightly with hammer on side of stator. 2. Lubricate with 3 in 1 oil.
	5. Idler bearing stiff.	1. Replace motor if motor smokes or smells. 1. Check voltage; 100 volts satisfactory.
	6. Motor bearings stiff.	2. If voltage is low turntable can be pushed by hand to help start.
	7. Defective motor coils.	
	8. Low voltage.	
Failure to Trip.	1. Dog sticks.	1. Dog bent, dirt, dog cover out of adjustment.
	2. Friction on friction finger (part of 52) out of adjustment.	1. Adjust screw on trip lever for just enough friction to move assembly as a unit when pushing fan shaped friction finger.
	3. Insufficient friction.	1. Friction spring bent or trip lever (52) bent.
	4. Slide (53) failed to return to out of cycle position after preceding cycle.	1. Check for friction between slide (53) and top plate (54), or pusher control levers (9 and 10) and slide post; or tail on slide binds ridge on top plate. 2. Tampering with springs is a cause of this. Replace springs. 3. Lubricate slide, top plate and slide latch shafts (7) (Houghton's Stayput No. 320 or SAE 30 motor oil). 4. If stop lever (40) is bent, there may be friction between slide and stop lever. If machine trips automatically but not with reject knob, check finger on tripping link (47).
	5. Record does not have eccentric groove or fast leadout spiral of 3/4" per turn.	1. Use Start-Reject to trip.
Pre-tripping.	1. Friction too great.	1. Relieve friction on friction finger by loosening screw (part of 52).
	2. Spring (38) on trip clutch finger too weak.	1. Adjust spring to six ounces tension. Shorten or replace if necessary.
	3. Trip clutch finger of trip lever should be pushed outward by turntable hub so that there is no play at shoulder with dog.	1. Adjust vertical tab on trip lever.
Continuous Cycling.	1. Tripping link finger (47) bent too far toward trip lever (52).	1. Adjust to proper position.
	2. Pickup actuating lever stop stud may touch trip lever.	1. Bend away.
Pickup Arm Moves Too High or Low in Cycle.	1. Pickup lifting pin (part of 65) bent.	1. Straighten as necessary.
Pickup Latch (part of 50) Fails to Engage Pin in Pickup Return Lever (43).	1. Pickup return lever (43) bent.	1. Straighten as necessary.
	2. Actuating lever (50) not rotated far enough.	1. Twist tail end of slide. 2. Rotate stop lever (40) out of way of pickup latch (50). Actuating lever and pickup return lever (43) when latched should be parallel; there should be minimum of play between these and pickup lifting pin. Twist end of return lever to obtain minimum play.
Sloppy or Indefinite Landing of Pickup Arm.	1. Play between actuating lever (50) and pickup return lever (43).	1. Twist end of return lever. 2. Make sure there is no friction and minimum play between pivot shaft assembly (66) and pickup arm. Adjust pivot screw if necessary.
Incorrect Landing.	1. Lug on record shelf assembly (71) needs adjusting.	1. Bend lugs in or out as required.
Failure to Play More Than One Record.	1. Stop lever (40) not moved properly.	1. Check play between crank (39) and lever. Maximum of 1/16". 2. Right hand pusher (77) not flush with record guide (69) (note: by flush is meant flush to 1/32" maximum back of flush). Bend crank if necessary. 3. See "Pickup Latch Fails to Engage Pin," above.
Failure to Stop After Last Record.	1. Lack of play between crank (39) and stop lever (40).	1. Jars during cycle may move stop lever.
	2. Stop lever (40) bent.	1. Slide does not return stop lever to proper position at end of cycle. Decrease stop lever angle by bending.

MAGUIRE
MODEL ARC-1



MAGUIRE MODEL ARC-1 AUTOMATIC RECORD CHANGER

LIST OF MANUFACTURERS USING MAGUIRE RECORD CHANGER—NAME AND MODEL NUMBERS

Manufacturer	*Name of Equipment*	*Model Numbers*	*Manufacturer*	*Name of Equipment*	*Model Numbers*
Algene Radio Company 305 Throop Avenue Brooklyn, N. Y.	Portable Combo	Combo No. 1	Lemarc Products, Inc. 7 Boerum Street Brooklyn, N. Y.	Lemarc	RC-1
Bedford Radio Mfg. Co. 1619 Bedford Avenue Brooklyn, N. Y.	Bedford	CAR-44 R-66	Nelge Electric Limited 35-37 Montgomery Street Jersey City, N. J.	Nelgetone	E6 E16
Bogue Electric Company 52 Iowa Avenue Patterson, N. J.	Homease		Philtone Electronic Co., Inc. 35 Fifth Avenue Brooklyn, N. Y.	Philtone Charmtone	P6
Boro Hall Music Co., Inc. 137 Pearl Street Brooklyn, N. Y.	Leetone	AP-100	Redi-Electric Co. 141 West 24th Street New York, N. Y.	Wire Record Changer	AR-100
Dynamic Electronics 37 West 57th Street New York, N. Y.	Custom Built		Sugar Electric Prod. Co. 814 Tenth Avenue New York, N. Y.	Sterling Electric	C-303 A-101 D-404
Globe Electronics, Inc. 225 West 17th Street New York, N. Y.	Globe	38P 6AP1	Televox, Inc. Mount Vernon, N. Y.	Televox	MC1 MC2
The Harold Company 96 Fifth Avenue New York, N. Y.	Wavemaster	103 103AC RC1A	Union Electronics Corp., 38-01 Queens Boulevard Long Island City, N. Y.	Union	101
Industrial Electronics Corp. 505 Court Street Brooklyn, N. Y.	Simplon	CA-5	Univox Company 83 Murray Street New York, N. Y.	Univox Rambler	MC-46P
Lavoie Laboratories Morganville, N. J.	Sterling	1284P	Viewtone Company 203 East 18th Street New York, N. Y.	Viewtone Aristocrat	RC-101 R1C-201

THE FOLLOWING PARTS MUST MOVE FREELY:

a. Slide (53) check friction by removing turntable and turntable hub and relieve pressure produced by springs. Slide should then move freely along top mounting plate (54). If slide binds, clean off any dirt that is present and check that slide or top plate is not bent. Relubricate between slide and top plate, and slide shafts with Houghton's Stayput No. 320 oil. If not available use SAE 30 or 40 motor oil.

b. Automatic stop lever (40)—remove friction washer (41) and see that lever does not bind.

c. Cranks (32 and 39) in support posts (28 and 51)—check that cranks are not bent. Pushers (80 and 77) should be flush with record guides (58 and 68) when machine is out of cycle. Right pusher, crank, and pusher control lever must move freely when slide is ½ way through cycle.

d. Pickup lifting lever (8)—check for binding in bearing.

e. Pickup actuating lever (50)—check for binding in bearing.

f. Pickup return lever (43)—check for binding in bearing.

g. Trip lever must move freely.

h. Dog must fall freely.

i. Idler plate must slide freely, wheel must rotate freely.

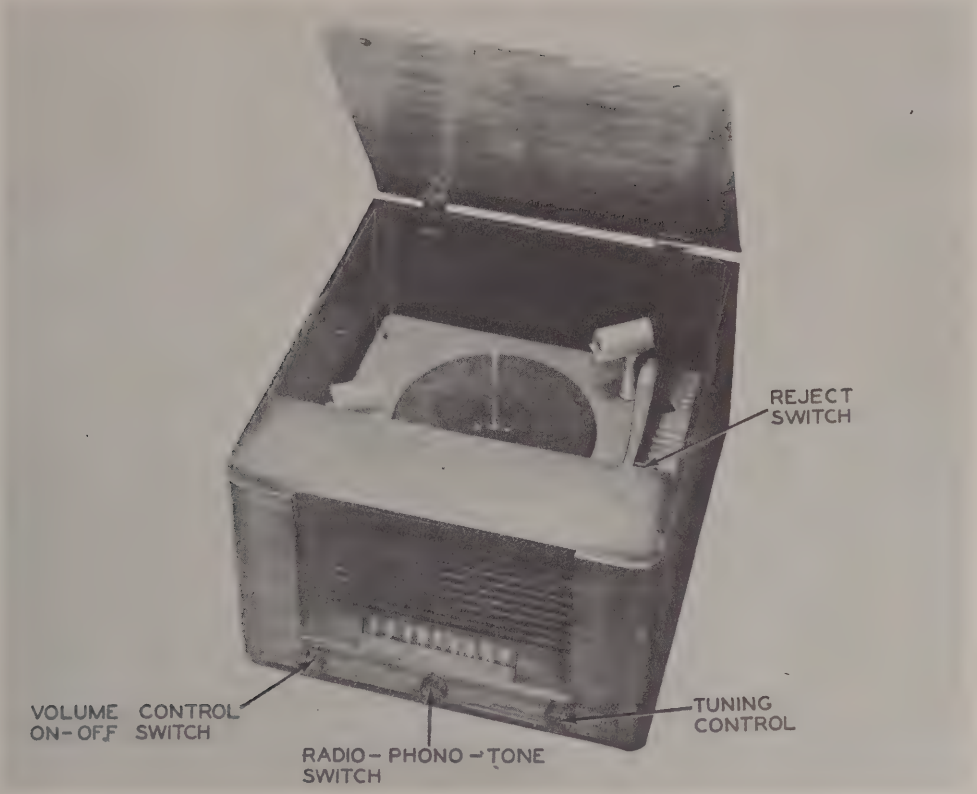
j. Turntable hub—be sure cam does not rub slide. If necessary add a shim washer.

k. Motor must turn freely.

In cases where levers are controlled by springs remove springs before checking for binding.

MAGUIRE
MODEL ARC-1

MAGUIRE
MODEL 700A



MAGUIRE
MODEL 700A

MAGUIRE MODEL 700A

TRADE NAME	Maguire Model 700A
MANUFACTURER	Maguire Industries Inc., W. Putnam Ave., Greenwich, Conn.
TYPE SET	AC Operated Combination Automatic Phono.-Superheterodyne Receiver, Self Contained Loop Antenna
TUBES (SEVEN)	Types, 14Q7 Converter, 7AG7 IF Amp., 14B6 Det.-AVC-AF, 14A4 Phase Inverter, 2-50A5 Power Output, 35Z3 Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1700KC RATING .450 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at extreme left calibration mark. If set does not have calibration marks install chassis in cabinet and mark the dial back plate at the 540 and 1500KC points. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Volume control at maximum volume position and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
Direct	High side to ext. ant. lead. Low side to chassis.	455KC	Quiet point on dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
Direct	"	1500KC	Pointer at extreme right hand calibration marks.	"	A5	" " " "
Direct	"	"	"	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MAGUIRE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	7AG7	7AG7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Phase Inverter	14A4	14A4	5AC	
5	Power Output	50A5	50A5	6AA	
6	Power Output	50A5	50A5	6AA	
7	Rectifier	35Z3	35Z3	4Z	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGUIRE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	150	A410427	2N521	M-80-40-150	EL-4521*	PRSA150-4040	EZ44315C	Filter - Blue
B	80	150					PRS150-40		" - Red
9	.05	600	B10417-68	TP415	S-6-05	TC-15	684-.05	DT6S5	Line Filter
10	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	50A5 Plate Bypass
11	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	" " "
12	.001	600	B10417-43	TP404	S-6-001	TC-21	684-001	DT6D1	Audio Coupling
13	.001	600	B10417-43	TP404	S-6-001	TC-21	684-001	DT6D1	" "
14	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	" "
15	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	" "
16	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
17	.001	600	B10417-43	TP404	S-6-001	TC-21	684-001	DT6D1	" "
18	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
19	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
20	.01	400	B10417-17	TP421	S-4-01	TC-11	484-01	DT4S1	Osc. Tuned Circuit††
21	.05	600	B10417-68	TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
22	.1	600	B10417-69	TP418	S-6-1	TC-1	684-.1	DT6P1	Line Isolating
23	.01	600	B10417-67	TP410	S-6-01	TC-11	684-01	DT6S1	Ant. Coupling
24	.1	600	B10417-69	TP418	S-6-1	TC-1	684-.1	DT6P1	Phono Shield Isolation
25	470	400	B10104-16	MC245	M0.5-35	1FM-35	1468-00005	5W5T5	Audio Plate Bypass
26	250	400	B10104-14	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Diode
27	56	400	B10104-9	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor

*Parallel two sections to get 80 MFD. Do not use bypass section.
†Use insulating tube.
††Not used in early production.

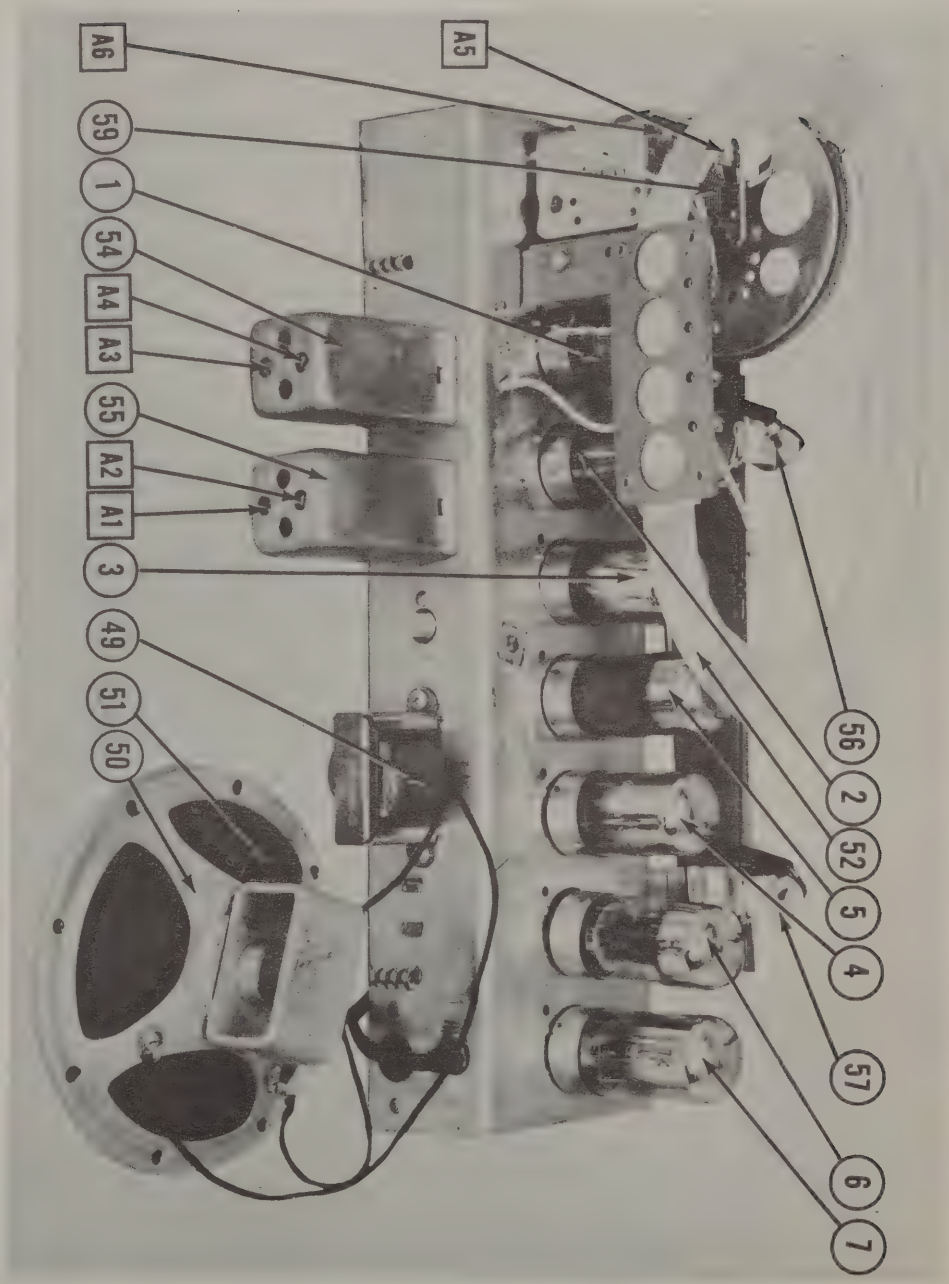
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGUIRE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	2 Meg.	1	A28072-1	TM249	D13-139X	T-115	Volume Control
B	Shaft		Not Req.	SS-1	A	Not Req.	Attach to 28A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGUIRE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
29	22KΩ	½	B10365-13	BTS-22K	Red-Red-Or. Osc. Grid
30	470KΩ	½	B10365-11	BTS-470K	Yl.-Vi.-Yl. AVC Network
31	2 Meg.	½	B10365-2	BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
32	220KΩ	½	B10365-7	BTS-220K	Red-Red-Yl. Line Isolating
33	220KΩ	½	B10365-7	BTS-220K	Red-Red-Yl. Diode Load
34	390Ω	½		BW-2-390	Or.-White-Br. IF Cathode-See Note 1
35	470KΩ	½	B10365-11	BTS-470K	Yl.-Vi.-Yl. 1st AF Grid
36	220KΩ	½	B10365-2	BTS-220K	Red-Red-Yl. 1st AF Plate Load
37	470KΩ	½	B10365-11	BTS-470K	Yl.-Vi.-Yl. Series Phono.
38	220KΩ	½	B10365-2	BTS-220K	Red-Red-Yl. Phono Load
39	33KΩ	½	B10365-12	BTS-33K	Or.-Or.-Or. Tone Compensation
40	33KΩ	½	B10365-12	BTS-33K	Or.-Or.-Or. Inverter Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAGUIRE PART No.	IRC PART No.	
41	470KΩ	½	B10365-11	BTS-470K	Yl.-Vl.-Yl. Inverter Grid
42	33KΩ	½	B10365-12	BTS-33K	Or.-Or.-Or. Inverter Cathode
43	470KΩ	½	B10365-11	BTS-470K	Yl.-Vl.-Yl. Output Grid
44	470KΩ	½	B10365-11	BTS-470K	Yl.-Vl.-Yl. Output Grid
45	100Ω	½	A10366-2	BW-½-100	Br.-Blk.-Br. Output Cathodes
46	560Ω	½	C10351-72	BTS-560	Grn.-Blue-Br. Filter
47	10Ω	½	C10351-1	BW-½-10	Br.-Blk.-Blk. Surge Limiter
48	90Ω	10	A10368-2	ABA-100#	Line Dropping & Pilot Light Shunt

#Adjust tap to 50Ω from one end.
Note 1-Not used in all models.
In early models Item 31 was 10 Meg. - Item 46 was 1800Ω - Item 38 was 470K - Items 37 and 47 were not used.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAGUIRE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
49	6700Ω	3.45Ω	58Ω	.4Ω	A28063-2	A-2201‡	T-22S47		‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAGUIRE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
50A	PM	3.45Ω		ST-106 Mod. P6-W		
B	PM	3.2Ω	C-20493-2**			**Used in some models only.
	CONE DIA.	VC DIA.				
51A	4-3/4"	1/2"				
B	5"x7"		NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MAGUIRE PART No.	MEISSNER PART No.	
52	Loop Ant.	0Ω	1.5Ω			
53	Osc. Coil		7Ω	A28145	14-1040	
54	Input IF	25Ω	24Ω	A28135-2	16-6658	
55	Output IF	21Ω	21Ω	A28136-2	16-6660	

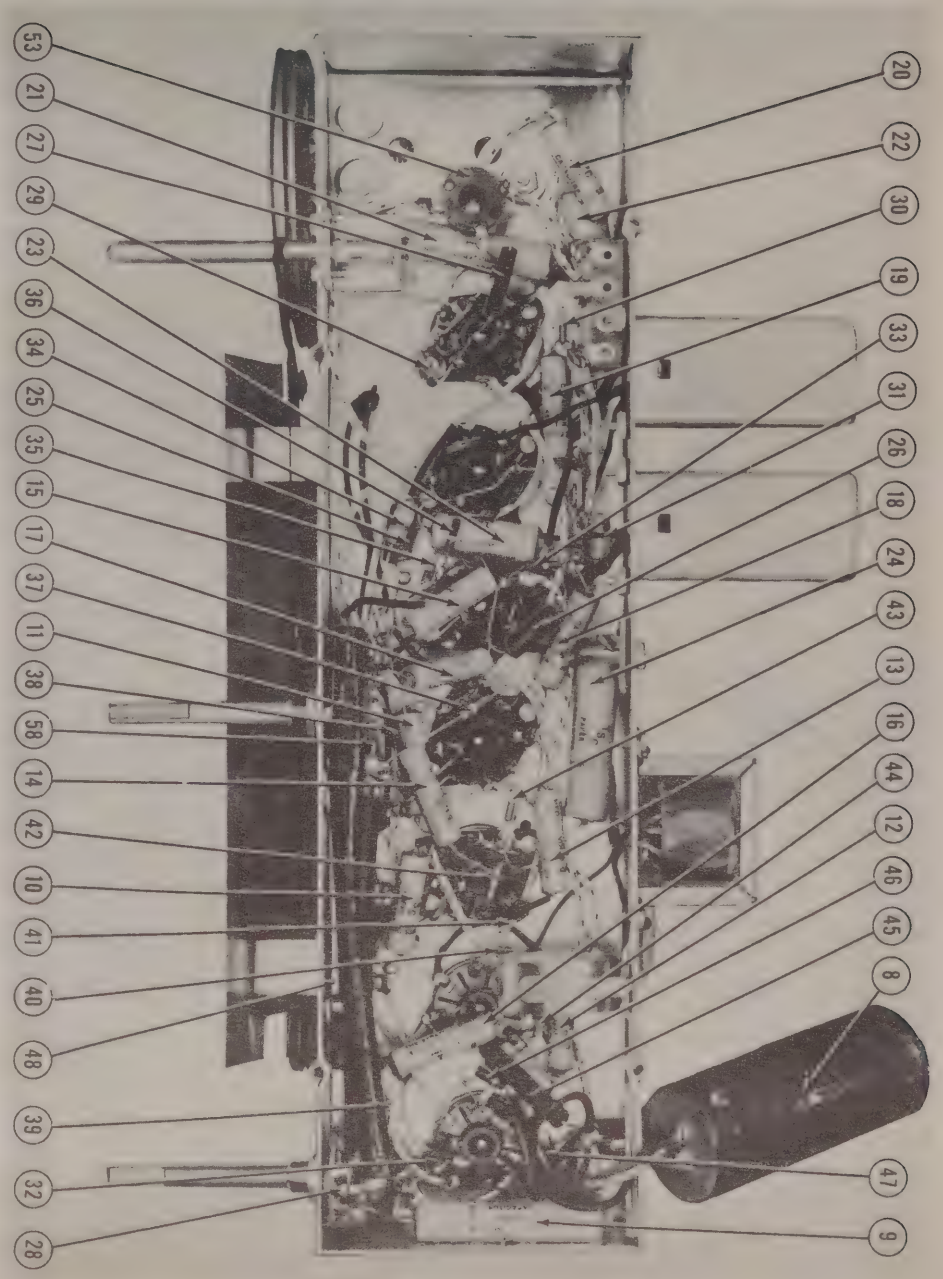
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MAGUIRE PART No.		
56	Bayonet	6-8	0.15	Brown			Type 47
57	"	6-8	0.15	Brown			" "

MISCELLANEOUS

ITEM No.	PART NAME	MAGUIRE PART No.	NOTES
58	Tuning Cap.	D10419-3	2 Gang Variable Cap.
59	Switch		Radio-Phono-Tone

CHASSIS—BOTTOM VIEW



DISASSEMBLY INSTRUCTIONS

1. Remove the following push-on type knobs and felt washers from the control shafts of the radio receiver. The volume control, phono-radio control and tuning control.
2. Remove five wood screws from tube panel board. Remove panel board.
3. Remove the reject switch lever by loosening the set screw.
4. Remove four flat headed screws and paper washers from the turntable.
5. Remove turntable covering (2 pieces).
6. Facing front of cabinet, move turntable assembly as far to the left as possible. Slide the right hand side over the mounting screw. Now, reverse the order, sliding the turntable to the right, lifting turntable up over the mounting bracket.
7. Disconnect phono-pickup jack from chassis.
8. Unsolder white lead from ground on chassis.
9. Remove turntable.
10. Remove line cord bracket holder from back of cabinet by removing the wood screw.
11. Remove four wood screws and washers holding chassis to cabinet.
12. Remove the wood screws from the recess of one of the front turntable support blocks. Remove the support block.
13. Remove the chassis from the cabinet.
14. Remove four wood screws from the speaker.
15. Remove speaker from chassis.

NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN WITH RADIO PHONO SWITCH IN NO. 4 POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	26.5V.AC	100V.DC	100V.DC	-3.2V.DC	0V.	-35V.DC	0V.	39V.AC
2	7AG7	0V.	100V.DC	100V.DC	0V.	0V.	-.1 V.DC	.45V.DC	7 V.AC
3	14B6	0V.	55V.DC	-45V.DC	0V.	-7V.DC	-7V.DC	0V.	15 V.AC
4	14A4	26.5V.AC	62V.DC	0V.	0V.	0V.	.55V.DC	36.5V.DC	15 V.AC
5	50A5	39V.AC	110 V.DC	100V.DC	97 V.AC	0V.	0V.	7.4 V.DC	94V.AC
6	50A5	94V.AC	108V.DC	100 V.DC	62V.DC	0V.	.05V.DC	7.4 V.DC	41.5V.AC
7	35Z3	41.5V.AC	117 V.AC	100 V.DC	115V.DC	115 V.DC	0V.	116 V.DC	7 V.AC

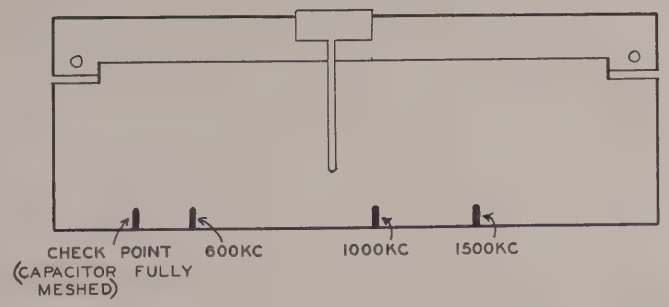
PLATE AND SCREEN VOLTAGES MAY BE LOWER IN EARLY MODELS.

RESISTANCE READINGS

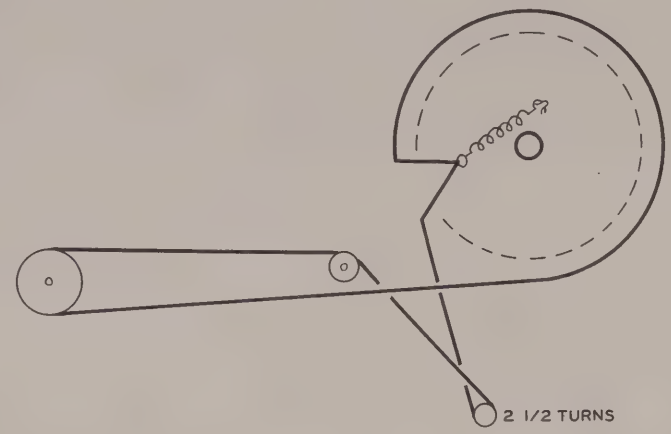
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	21Ω	45KΩ	45KΩ	175KΩ	.3Ω	2.3MEG.	.3Ω	28Ω
2	7AG7	0Ω	45KΩ	45KΩ	0Ω	0Ω	1.9MEG.	340Ω	6.5Ω
3	14B6	0Ω	265KΩ	410 KΩ	0Ω	195KΩ	195KΩ	0Ω	12Ω
4	14A4	21Ω	78KΩ	0Ω	0Ω	0Ω	480KΩ	33Ω	12Ω
5	50A5	28Ω	45KΩ	45 KΩ	44Ω	1.8MEG.	450KΩ	87Ω	41Ω
6	50A5	41Ω	45KΩ	45KΩ	78KΩ	0Ω	420KΩ	87Ω	30Ω
7	35Z3	30Ω	30Ω	45KΩ	45KΩ	45KΩ	0Ω	45KΩ	6.5Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

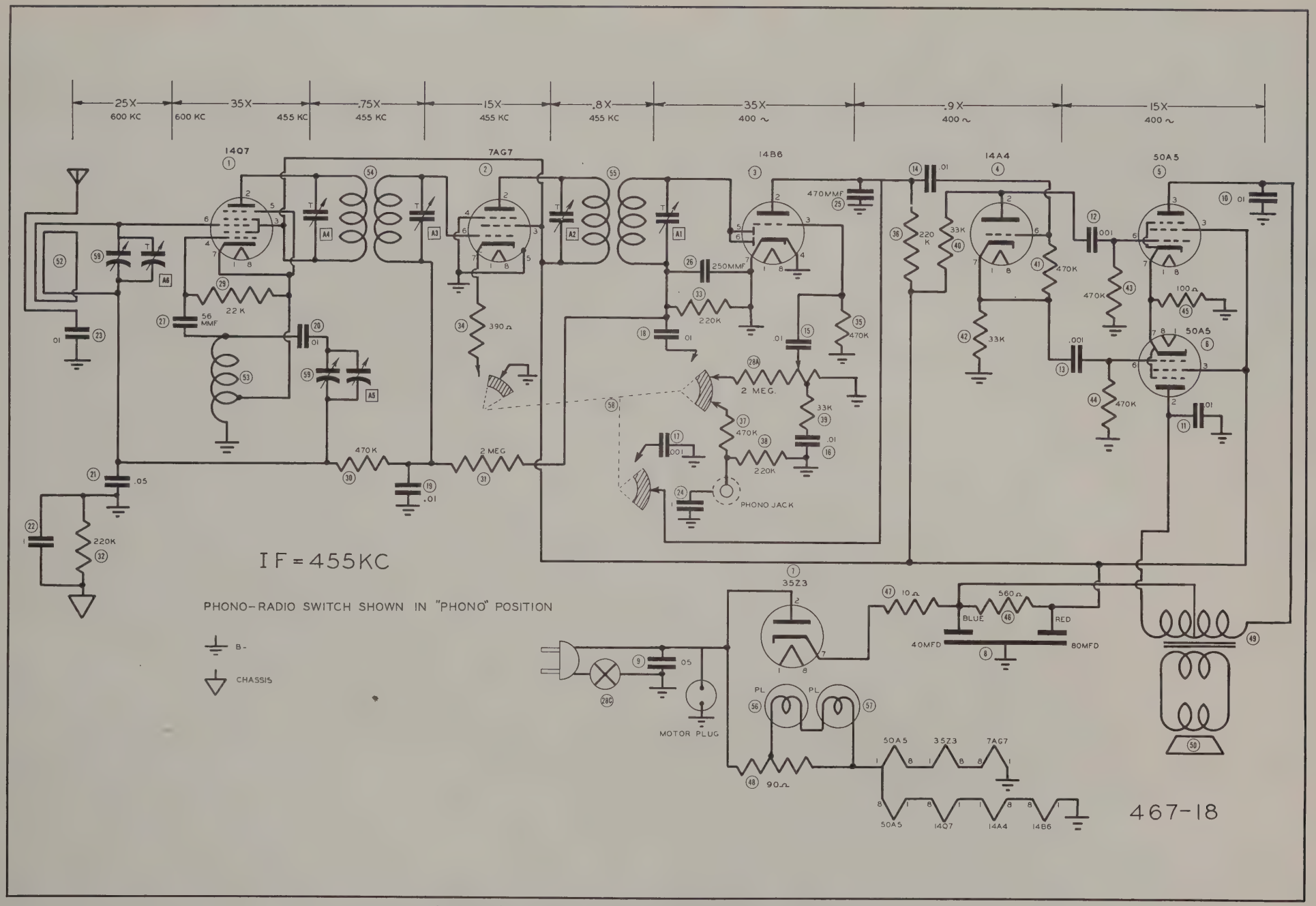
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CALIBRATION CHART

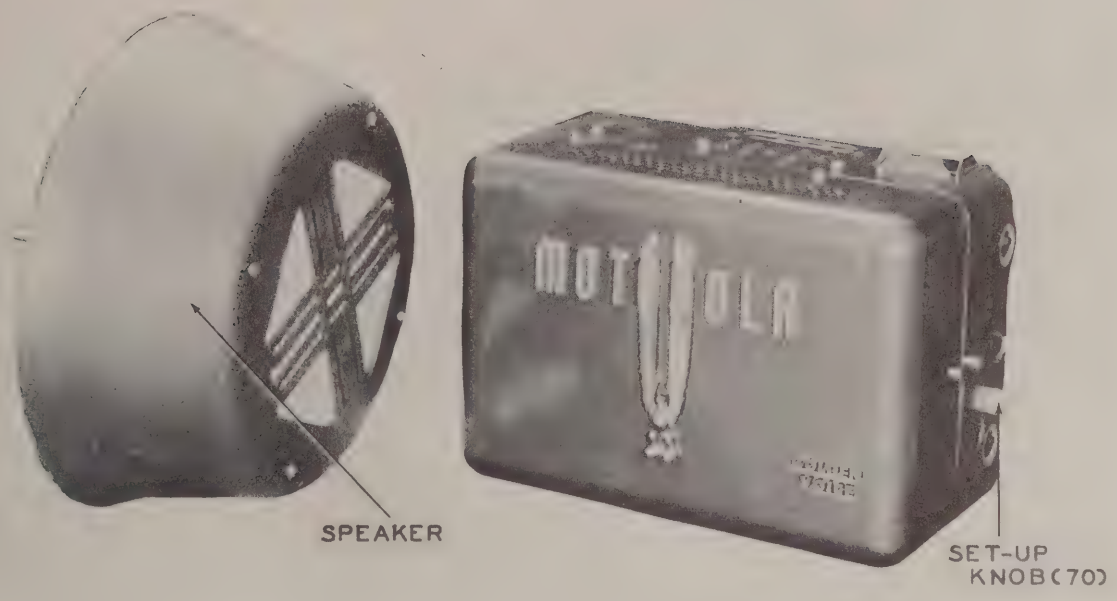


DIAL CORD DRIVE



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

MOTOROLA
MODEL 705



MOTOROLA
MODEL 705

MOTOROLA MODEL 705

TRADE NAME Motorola Model 705 (Chassis AS-16)
MANUFACTURER Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET Superheterodyne Dual Unit Automotive Set with Automatic Tuning
TUBES (EIGHT) Types 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT 1st IF Amp., 6SQ7GT Det.-AVC-AF, 6SQ7GT AF Inverter, 2-6V6GT Power Output, 6X5GT or 0Z4 Rectifier.

POWER SUPPLY 6.3 Volts DC
TUNING RANGE—BROADCAST 535-1600KC RATING 9.9 Amps. @ 6.3V DC

ALIGNMENT INSTRUCTIONS

Volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 (grid) of 6SA7. Low side to chassis.	455KC	High freq. end. (Tuning control fully clockwise)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
60 MMF. and 21" coaxial lead. Capacitor at gen. end.	Antenna receptacle.	1600KC	High freq. end. Cores are to be projecting 1-1/8" from ends of cans and tuning against stop.	"	A5,A6, A7.	Adjust for maximum output in order given.
"	"	1425KC	Exactly one full turn from high freq. end.	"	A8,A9, A10.	Adjust cores for maximum output. Mark manual tuning shaft coupling to indicate full turn
"	"	Gen. power off but leave connected.	Four more full turns in.	"	A11	Adjust for maximum noise.
			1400KC	"	A7	Install set in car and connect antenna. Adjust for maximum noise.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	1st IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	AF Inverter	6SQ7GT	6SQ7GT	8Q	
6	Power Output	6V6GT	6V6GT	7AC	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	6X5GT	6X5GT	6S	Interchangeable with 0Z4 type, RMA Base 4R

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	30	300	23A27718	FP331	DY-2x30-350/50-50	EL-323	AF44J	UP6BJ38	▲ Filter
B	30	350							■ "
C	20	25					PRS50-25	BR202A	■ "
10	.006	1600	8A12840-A	0W344	XTIMS10-.006	TR-26	1089-.006	MD16D6	Buffer
11	.5	100	8A19133-B	TP431	S-4-5	TC-5	484-.5	DT4P5	Hash Filter
12	.5	100	8A19133-B	TP431	S-4-5	TC-5	484-.5	DT4P5	" "
13	.003	100		TP406	S-6-003	TC-23	484-.003	DT6J3	6V6 Plate Bypass
14	.01	400	8K23690-E	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
15	.01	400	8K23690-E	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
16	.05	400	8A14791-A	TP426	S-4-05	TC-15	484-.05	DT4S5	Muting Capacitor
17	.002	400	8A4736-C	TP405	S-4-002	TC-22	484-.002	DT6D2	Tone Compensation
18	.01	400	8K23690-E	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
19	.01	400	8K23690-E	TP421	S-4-01	TC-11	484-.01	DT4S1	Tone Compensation
20	.1	400	8K13166-D	TP428	S-4-1	TC-1	484-.1	DT4P1	Plate Bypass
21	.05	400	8A14791-A	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
22	.5	100	8A19133-B	TP431	S-4-5	TC-5	484-.5	DT4P5	Solenoid Shunt
23	.05	400	8A14791-A	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
24	.006	100		TP409	S-6-006	TC-26	484-.006	DT6D6	Ant. Coupling
25	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
26	1000	500		MC255	M0.3-21	1FM-21	1468-.001	1W5D1	6SQ7 Plate Bypass
27	50	500		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	AVC Coupling
28A	120								Diode Filter
B	120								" "
29	400								Fixed Trimmer
30	50								Osc. Grid Capacitor
31	5								RF Coupling
32	90								Ant. Filter

CONTROLS

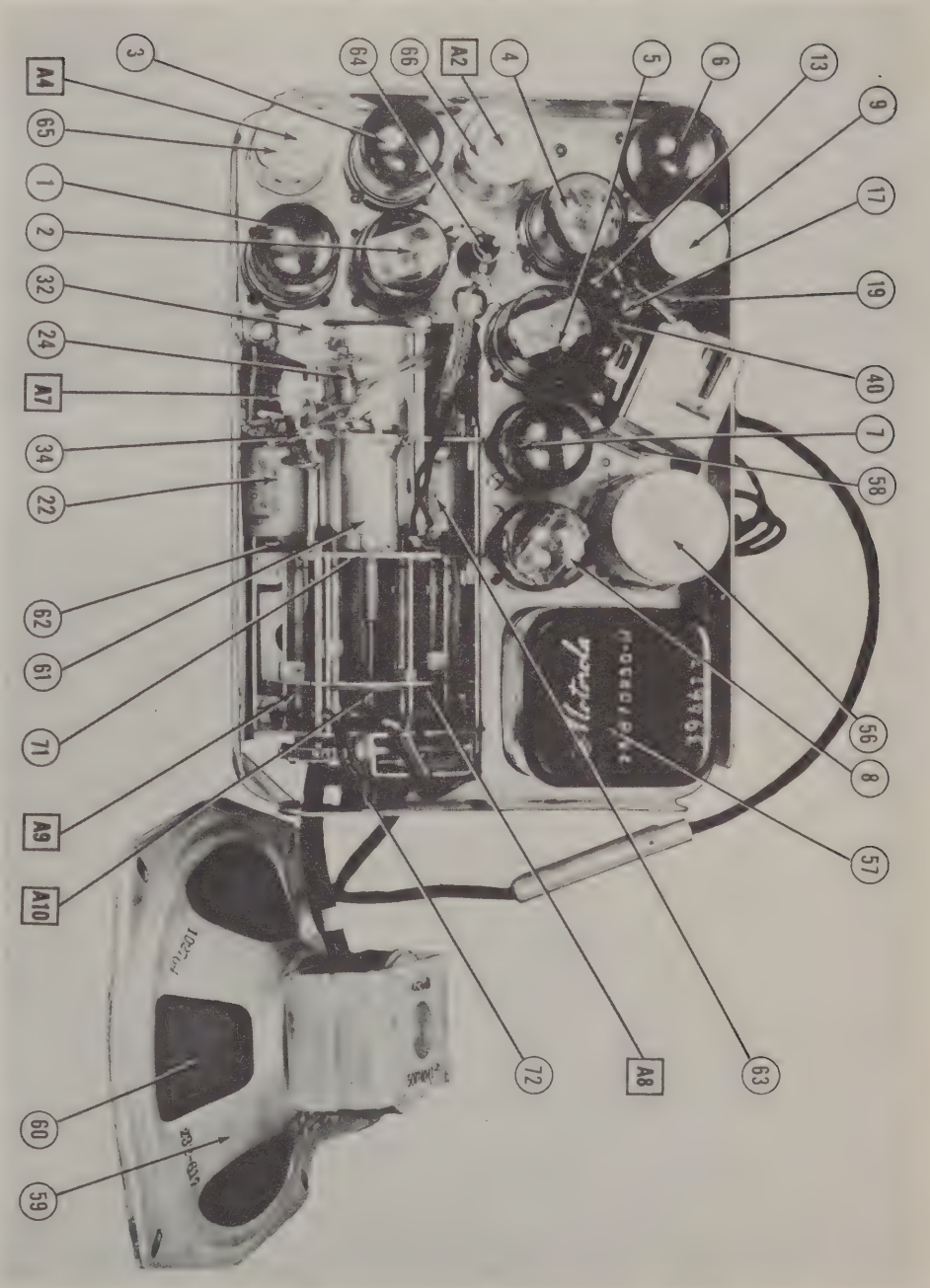
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
33A	500KΩ	1	18A71925-0	TM233	D18-133X		Volume Control
B	Shaft		Not Req.	SS19	A & C3*		Attach to 33A per instructions
C	Switch		" "	M26	41		" " " " "

*Use IRC "A" Shaft and "C3" Coupler with part of original shaft and square hole insulated coupler.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
34	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
35	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid
36	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Osc. Grid
37	22KΩ	1		BTA-22K	Red-Red-Or. Screen Dropping
38	22KΩ	1		BTA-22K	" " " " "
39	330Ω	1		BTA-330	Or.-Or.-Br. Plate Filter
40	22KΩ	½		BTS-22K	Red-Red-Or. Tone Compensation
41	1 Meg.	½		BTS-22K	Br.-Blk.-Grn. AVC Network
42	47KΩ	½		BTS-47K	Yl.-Vi.-Or. IF Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

43	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. 1st AF Grid
44	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. 1st AF Grid
45	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
46	220KΩ	½		BTS-220K	Red-Red-Yl. Inverter Plate Load
47	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Inverter Grid
48	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
49	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
50	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
51	150Ω	1		BW-1-150	Br.-Grn.-Br. Voltage Divider Bias
52	62Ω	½		BW-½-68	Blue-Red-Blk. Voltage Divider Bias
53	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
54	50Ω	1		BW-1-47	Grn.-Blk.-Blk. Hash Suppression
55	50Ω	1		BW-1-47	Grn.-Blk.-Blk. " "

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
56	Interrupter	6.3	115∿	3333	859	5342M	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
57	5.5V @ 2.6A each section	280VAC CT @ .074A			25B70950-D	P-4063	T-14R36†	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
58	13770Ω	350Ω	4.0Ω	.35Ω		A-3831‡			‡Cut off mounting tabs and solder unit to chassis.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-432		
59	4.25Ω	4Ω	50B74041-O	Mod. H6-S		
	CONE DIA.	VC DIA.				
60	6-1/16"	11/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

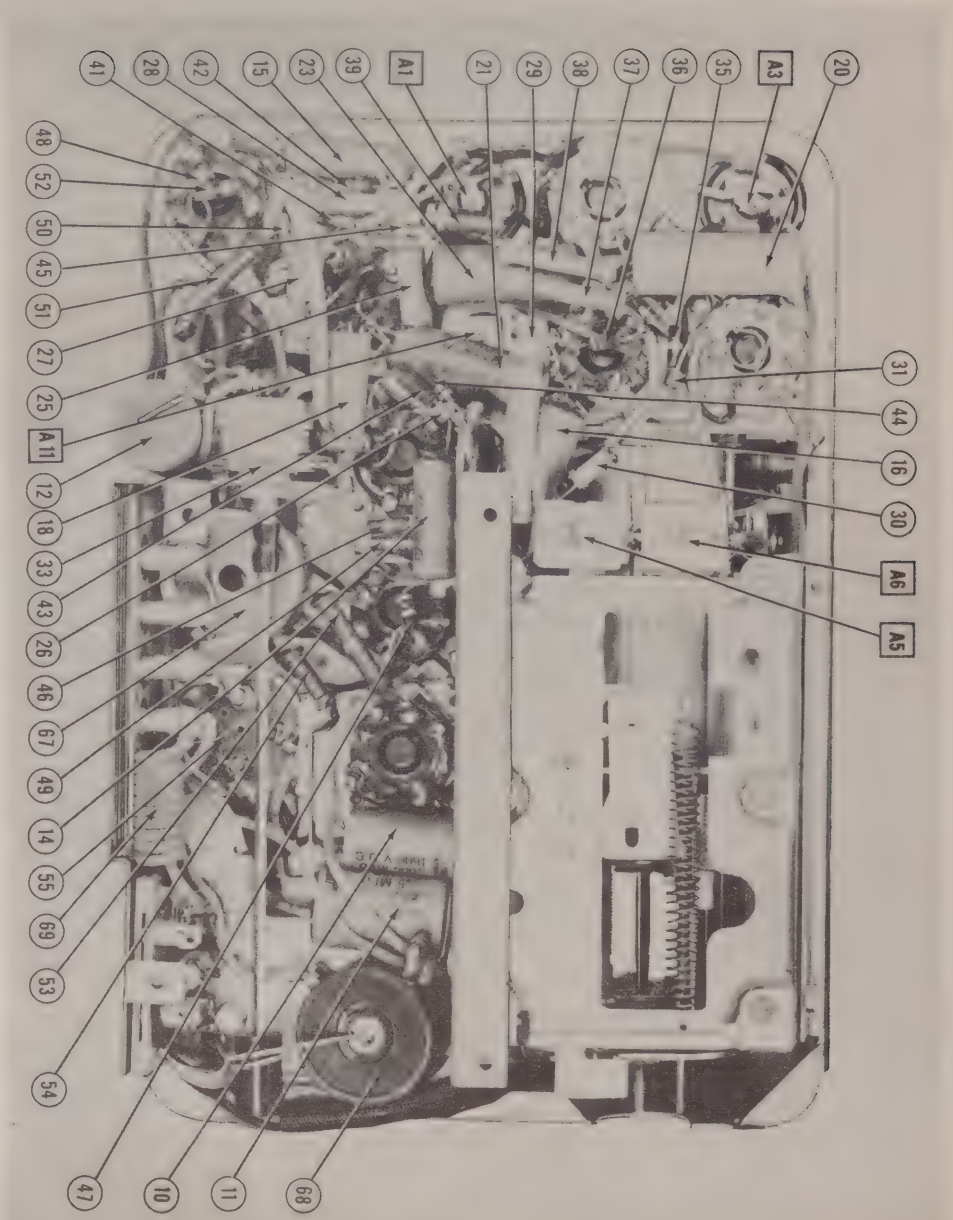
R F COILS

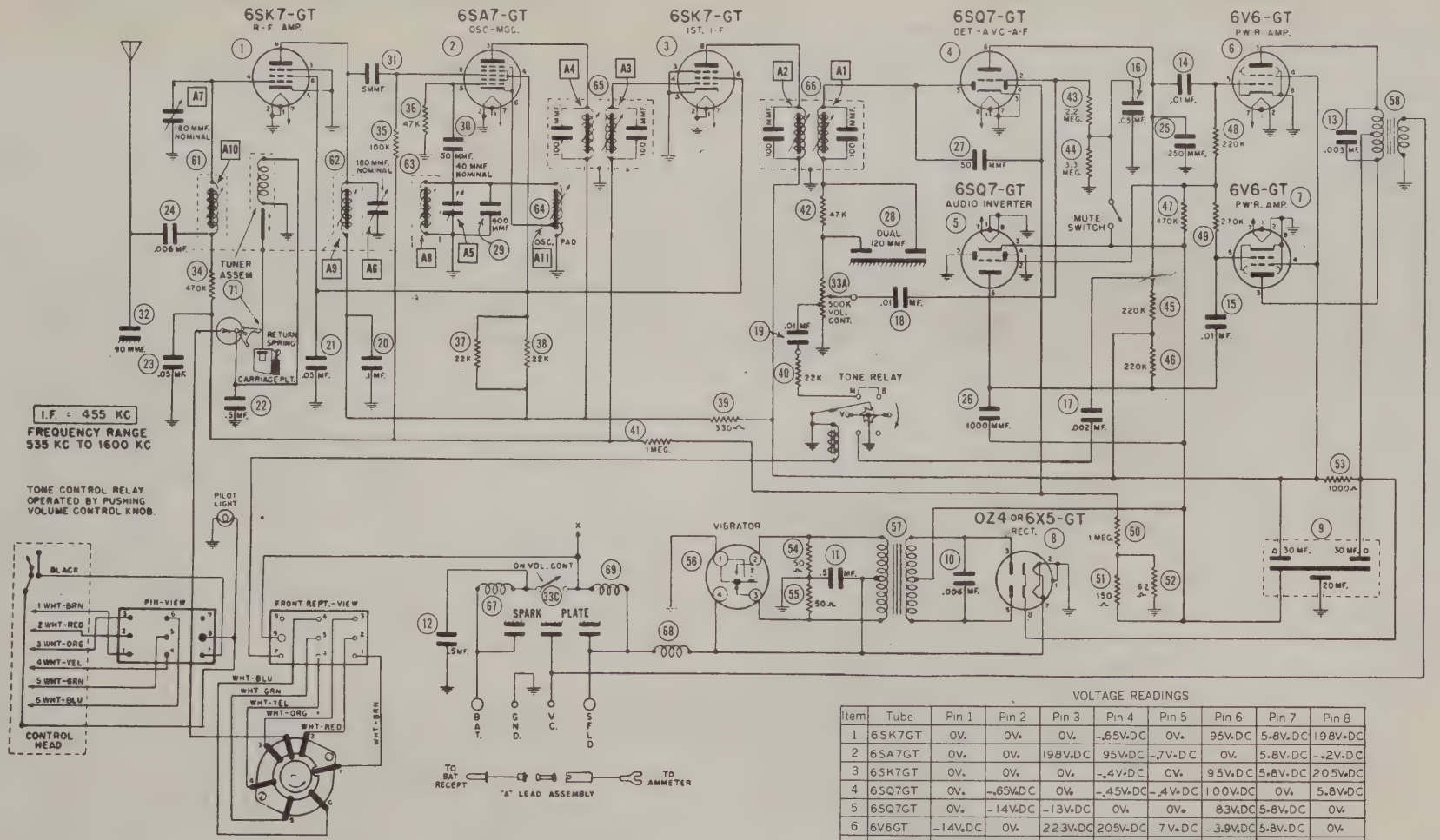
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	INSTALLATION NOTES
61	Ant. Coil		12.8Ω	1A71881		Items 53, 54, 55 ganged together and slug tuned
62	RF Coil		12.2Ω	1A71881		
63	Osc. Coil		1.8Ω	1A71879		
64	Osc. Padder	2Ω		24A70227		
65	Input IF	16Ω	14.9Ω		16-6666	
66	Output IF	15.5Ω	16.2Ω		16-6667	
67	Bat. RF Ch.	0Ω		24K70840		
68	Vib. RF Ch.	0Ω		24A70199		
69	Spkr. Field RF Choke	0Ω		24K71423		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
70	Set-up Button		
71	Tuner Assby.		
72	Set-up Button.		

CHASSIS—BOTTOM VIEW





PUSH BUTTON ADJUSTMENTS

1. Turn set on and allow to warm up for at least five minutes.
2. Collapse antenna until signal is weak.
3. Press Manual "M" button on control head.
4. Turn tuning knob until desired station is tuned in.
5. Press desired button and hold in until tuning mechanism completes its operation.
6. Press "set up button" (73) until "click" is heard.
7. Turn "set up knob" (71) until previously noted program is heard. This station is now set up.
8. Repeat steps 3 to 7 for each additional station desired.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.65V.DC	0V.	95V.DC	5.8V.DC	198V.DC
2	6SA7GT	0V.	0V.	198V.DC	95V.DC	-.7V.DC	0V.	5.8V.DC	-.2V.DC
3	6SK7GT	0V.	0V.	0V.	-.4V.DC	0V.	95V.DC	5.8V.DC	205V.DC
4	6SQ7GT	0V.	-.65V.DC	0V.	-.45V.DC	-.4V.DC	100V.DC	0V.	5.8V.DC
5	6SQ7GT	0V.	-14V.DC	-13V.DC	0V.	0V.	83V.DC	5.8V.DC	0V.
6	6V6GT	-14V.DC	0V.	223V.DC	205V.DC	-7V.DC	-3.9V.DC	5.8V.DC	0V.
7	6V6GT	-13V.DC	0V.	223V.DC	205V.DC	-11V.DC	-14V.DC	5.8V.DC	0V.
8	6X5GT/0Z4	0V.	0V.	300V.AC	-13V.DC	300V.AC	0V.	5.6V.DC	228V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	2.6MEG	0Ω	120 KΩ	.25Ω	120 KΩ
2	6SA7GT	0Ω	0Ω	110 KΩ	120 KΩ	40 KΩ	.5Ω	.25Ω	2.3MEG
3	6SK7GT	0Ω	0Ω	0Ω	2.2 MEG	0Ω	120 KΩ	.25Ω	110 KΩ
4	6SQ7GT	0Ω	5 MEG	0Ω	1.2 MEG	500 KΩ	330 KΩ	0Ω	.25Ω
5	6SQ7GT	0Ω	500 KΩ	190Ω	0Ω	0Ω	330 KΩ	.25Ω	0Ω
6	6V6GT	500 KΩ	0Ω	110 KΩ	110 KΩ	710 KΩ	56Ω	.25Ω	0Ω
7	6V6GT	190Ω	0Ω	110 KΩ	110 KΩ	800 KΩ	500 KΩ	.25Ω	0Ω
8	6X5GT/0Z4	0Ω	0Ω	460Ω	200Ω	490Ω	INF	.25Ω	110 KΩ

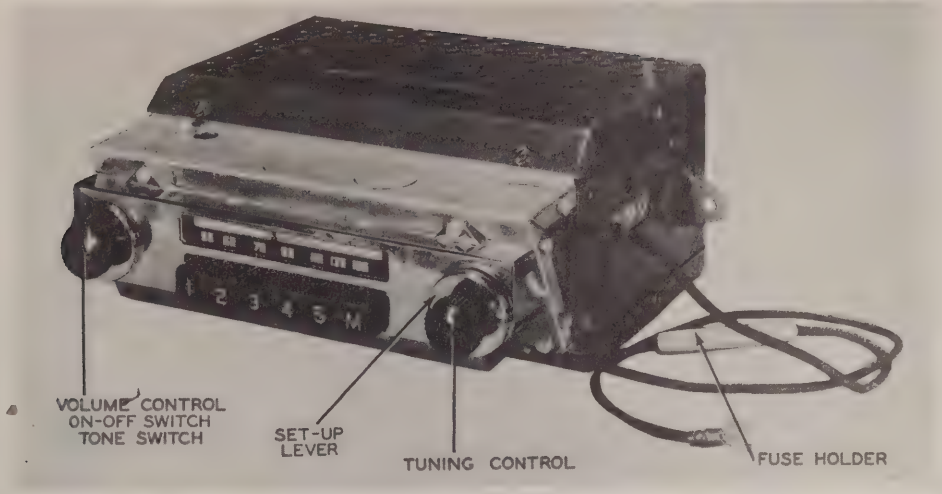
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-19

At the request of the manufacturer stage gain measurements are at 20,000 ohms per volt.

1 - DC Voltage measurements are at 20,000 ohms ver volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



PUSH BUTTON ADJUSTMENTS

1. Turn on receiver and allow to warm up for at least 5 minutes.
2. Press the manual button marked "M".
3. Turn the tuning knob until the desired station is tuned in.
4. Press the number one button.
5. Turn the set-up lever clockwise as far as it will go and release, allowing it to return.
6. Turn the tuning knob until the previously heard program is heard. (The dial pointer will not indicate the station to which the button is set.) The dial pointer may reach the end of the dial scale before the desired station is received. However, continue turning the tuning knob until the station is received. The dial pointer mechanism will not be affected.
7. Press the "M" button and the number one button is set. Check the setting of the button by tuning in the desired station having the "M" button pushed in and then push the automatic button. Either button should give the same volume and clarity.
8. Repeat the above procedure, steps 2 through 7, for each of the remaining push buttons.

MOTOROLA MODEL FD6

TRADE NAME Motorola Model FD6
MANUFACTURER Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET Superheterodyne Dual Unit Automotive Set with Automatic Tuning
TUBES (SIX) Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT or 0Z4 Rectifier.

POWER SUPPLY 6.3 Volts DC
TUNING RANGE—BROADCAST 535-1600KC RATING 8.2 Amps @ 6.3V DC

ALIGNMENT INSTRUCTIONS

Volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 (grid of 6SA7. Low side to chassis.)	455KC	High freq. end (Tuning control fully clockwise)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
60 MMF. and 21" coaxial lead. Capacitor at gen. end.	Antenna receptacle.	1600KC	High freq. end. Cores are to be projecting 1-1/8" from ends of cans and tuning against stop.	"	A5, A6, A7.	Adjust for maximum output in order given.
"	"	1425KC	Exactly one full turn from high freq. end.	"	A8,A9, A10.	Adjust cores for maximum output. Mark manual tuning shaft coupling to indicate full turn.
"	"	Gen. power off but leave connected	Four more full turns in.	"	A11	Adjust for maximum noise.
			1400KC	"	A7	Install set in car and connect antenna. Adjust for maximum noise.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6A	Rectifier	0Z4	0Z4	4R	0Z4 and 6X5GT Interchangeable in this set.
6B	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	400	23A75429	FP339	DY-2x20-450/	EL-322	AF44J	UP6BJ38	■ Filter
B	20	400			20-25				▲ "
C	20	25					PRS25-25	BR202A	"
8	.006	1600	8A12840	0W344	XTIMS10-.006	TR-26	1684-006	MD16D6	Buffer
9	.5	100	8A19133	TP431	S-4-5	TC-5	484-.5	DT4P5	Hash Filter
10	.5	100	8A19133	TP431	S-4-5	TC-5	484-.5	DT4P5	" "
11	.006	400	8A71910	TP409	S-6-006	TC-26	484-006	DT6D6	6V6 Plate Bypass
12	.004	400	8A71909	TP407	S-6-004	TC-24	484-004	DT6D4	Tone Compensation
13	.03	400	8A71911	TP424	S-6-03	TC-13	484-03	DT4S3	Audio Coupling
14	.05	400	8A14791	TP426	S-4-05	TC-15	484-05	DT4S5	Muting Capacitor
15	.01	400	8K23690	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
16	.01	400	8K23690	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
17	.1	400	8K13166	TP428	S-4-1	TC-1	484-.1	DT4P1	Plate Bypass
18	.05	400	8A14791	TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
19	.5	100	8A19133	TP431	S-4-5	TC-5	484-.5	DT4P5	Solenoid Shunt
20	.05	400	8A14791	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
21	.006	100	8A4529	TP409	S-6-006	TC-26	484-006	DT6D6	Ant. Coupling
22	250	500	21R6648	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
23	50	300	21R6513	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Diode Coupling
24A	50		21A70176						Diode Filter
B	50								" "
25	400		21A71872						Fixed Trimmer Cer.
26	50	300	21R6513	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
27	5		21K70720						RF Coupling
28	90		21A20877						Ant. Filter

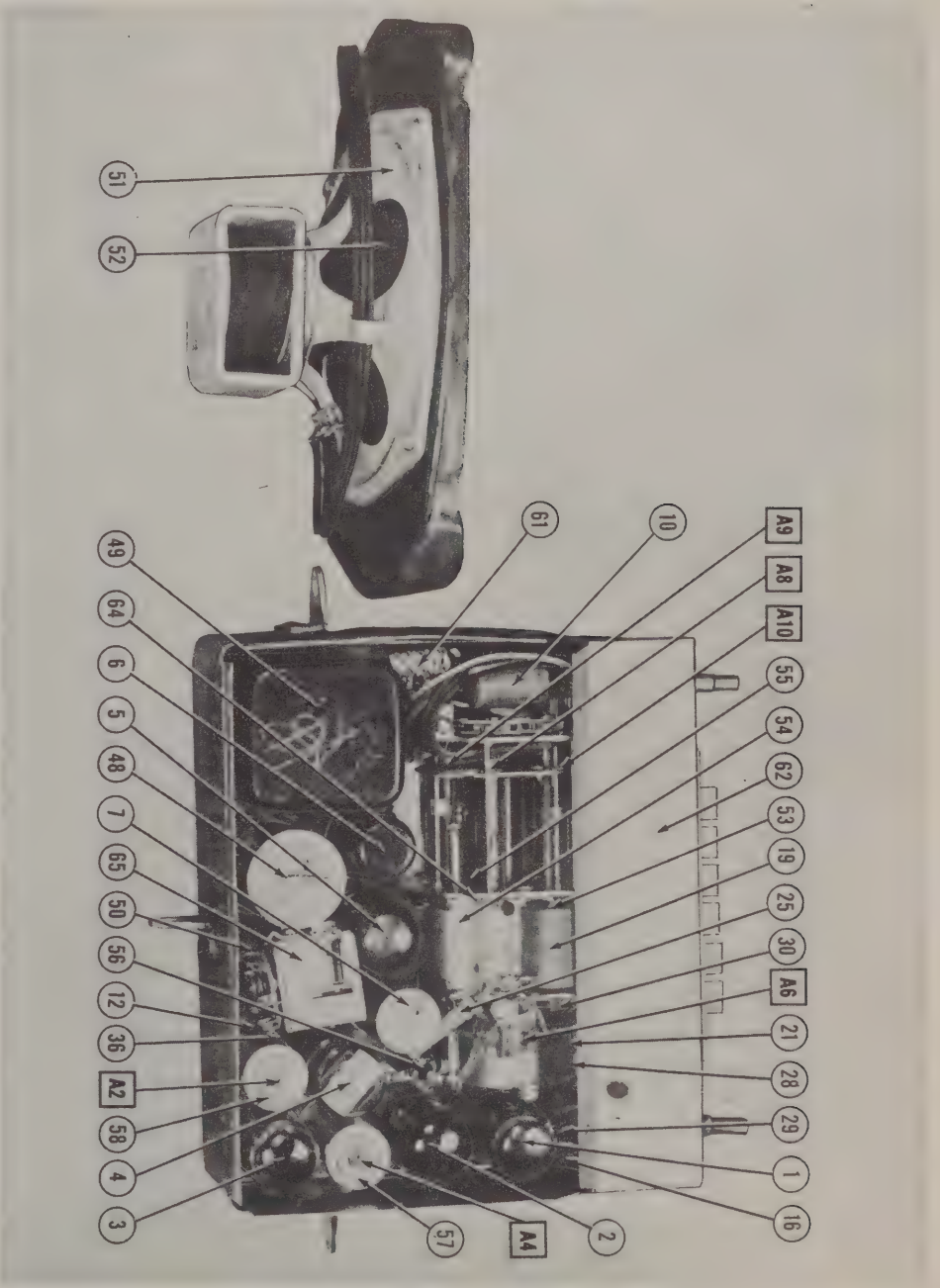
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29	500K	1	18A70172				Volume Control & Switch 18A71925

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
30	470KΩ	½	6R6032	BTS-470K	Yl.-Vl.-Yl. AVC Network
31	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. Converter Grid
32	47KΩ	½	6R6056	BTS-47K	Yl.-Vl.-Or. Osc. Grid
33	10KΩ	1	6R6106	BTA-10K	Br.-Blk.-Or. Screen Dropping
34	330Ω	1	6R6147	BTA-330	Or.-Or.-Br. Plate Filter
35	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
36	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Tone Compensation
37	47KΩ	½	6R6056	BTS-47K	Yl.-Vl.-Or. IF Filter
38	3.3 Meg.	½	6R2118	BTS-3.3 Meg	Or.-Or.-Grn. 1st AF Grid
39	2.2 Meg.	½	6R3927	BTS-2.2 Meg	Red-Red-Grn. 1st AF Grid
40	470KΩ	½	6R6032	BTS-470K	Yl.-Vl.-Yl. 1st AF Plate Load
41	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. Output Grid
42	1000Ω	1	6R6184	BTA-1000	Br.-Blk.-Red Filter
43	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
44	180Ω	1	6R6390	BW-1-180	Br.-Gray-Br. Voltage Divider Bias
45	47Ω	½	6R5550	BW-½-47	Yl.-Vl.-Blk. " " "
46	50Ω	½	6R6005	BW-½-47	Grn.-Blk.-Blk. Hash Suppression
47	50Ω	½	6R6005	BW-½-47	Grn.-Blk.-Blk. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
48	Interrupter	6.3	115~	3333	859	5342M	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDASON PART No.	INSTALLATION NOTES
49	5.3VDC @ 4.3A	600VCT @ .061A			25B70950B	P-4062	T-14R35*	*Drill new mounting holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
50	12000Ω	3.6Ω	370Ω	.6Ω	25B72258	A-3856	T-22S47‡		‡Solder tone relay bracket to frame of replacement unit.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-568		
51A	4.0Ω	3.6Ω	50B74946	Mod. E6-RS		
B			50B71900†			†Alternate Speakers
C			50B74041†			† " "
	CONE DIA.	VC DIA.				
52	6-1/8"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	INSTALLATION NOTES
53	Ant. Coil		12.8Ω	1A71881		Items 53, 54, 55 ganged together and slug tuned.
54	RF Coil		12.2Ω	1A71881		
55	Osc. Coil		1.8Ω	1A71879		
56	Osc. Padder	2Ω		24A70227		
57	Input IF	16Ω	14.9Ω		16-6666	
58	Output IF	15.5	16.2Ω		16-6667	
59	Bat. RF Ch.	0Ω		24K70840		
60	Vib.RF Ch.	0Ω		24A70199		
61	Spkr. Field RF Choke	0Ω		24K71423		

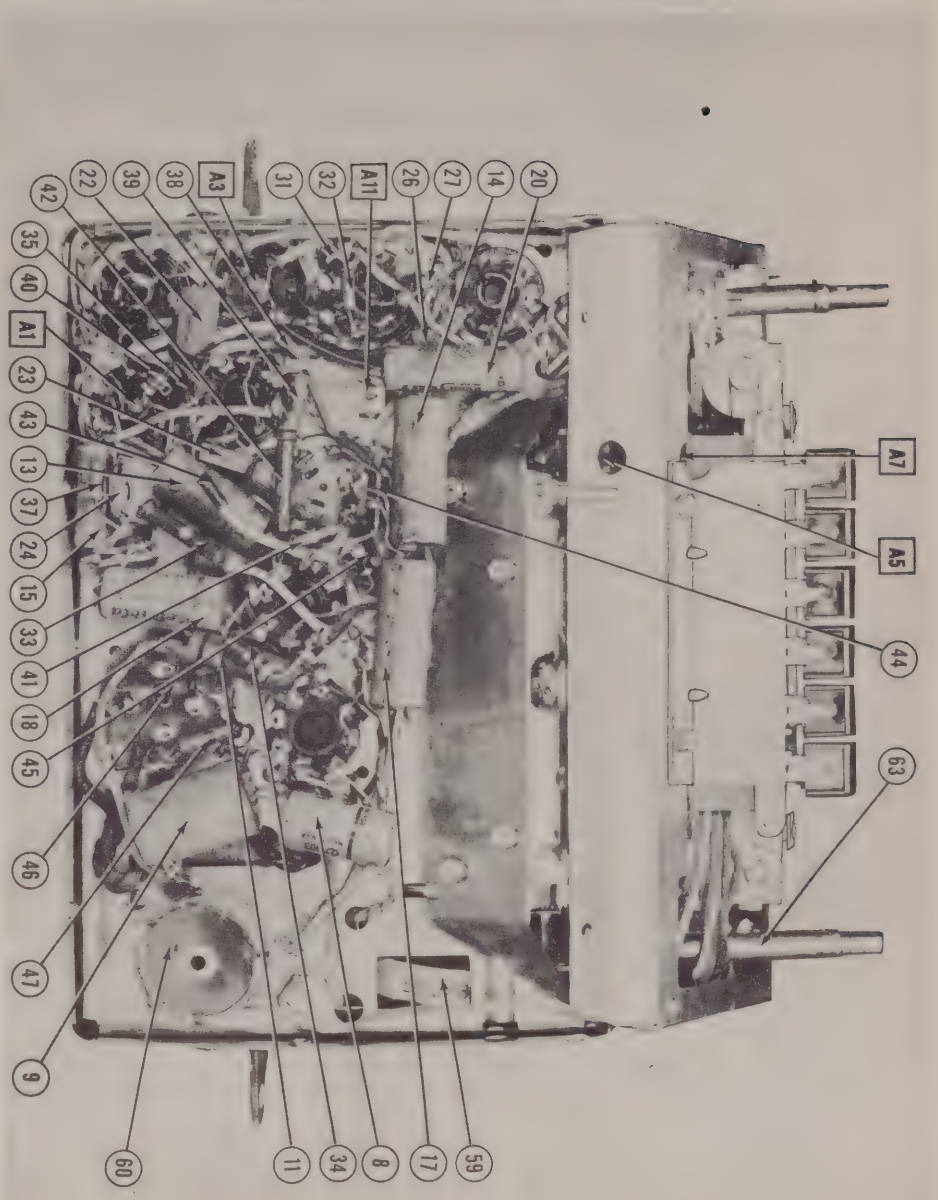
DIAL LIGHT

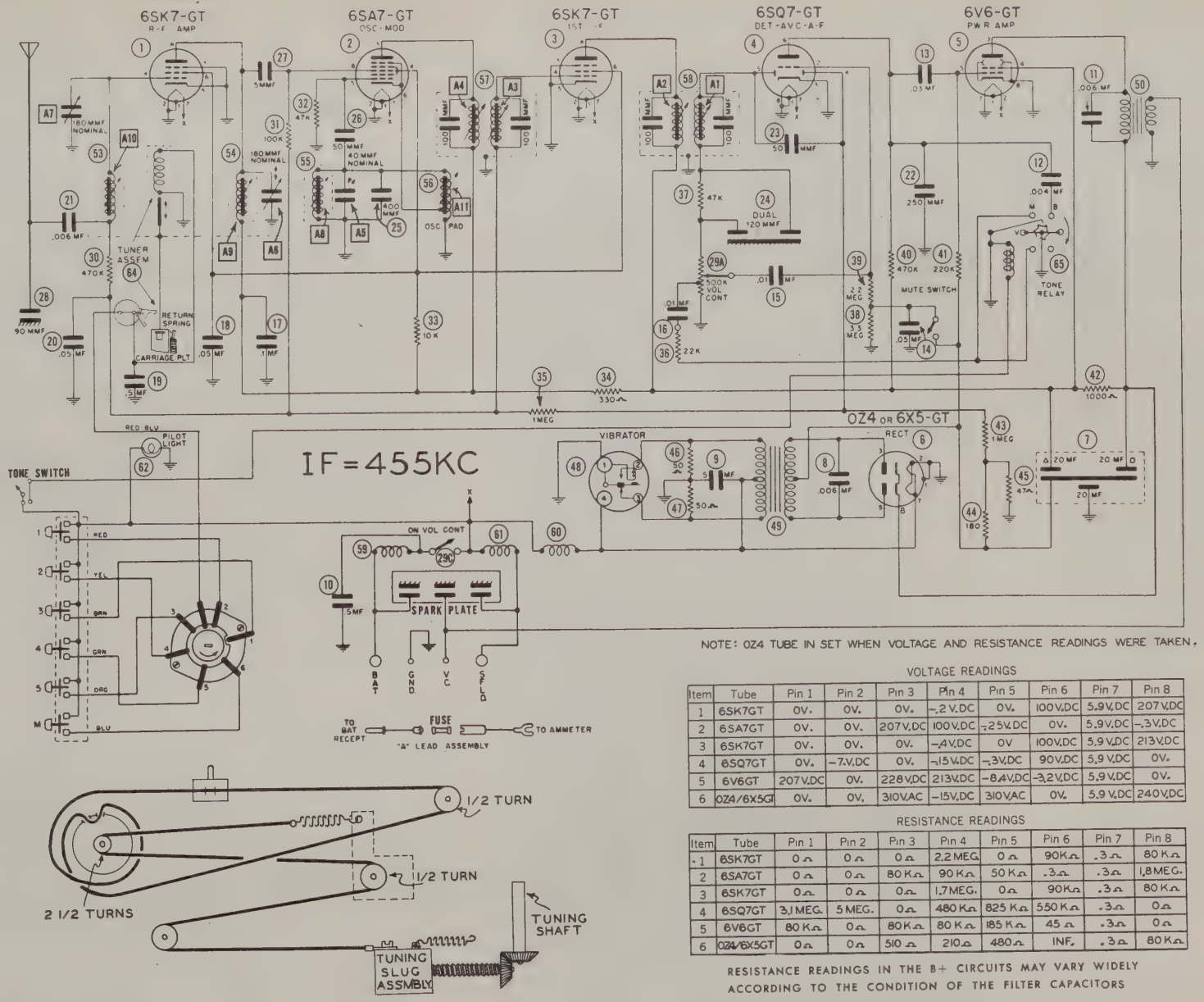
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.		INSTALLATION NOTES
62	Bayonet	6-8	0.25	Blue	65X10867		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
63	Set-up Lever		
64	Tuner Assby.	1X73000	
65	Tone Relay	1X71470	
A5	Trimmer Cap.	20A70214	Osc. Adjustment 30-60 MMF.
A6	" "	8A70601	RF Adjustment 50-180 MMF.
A7	" "	8A70601	Ant. Adjustment 50-180 MMF.
	Selector Switch	40B70952	
	Solenoid Switch	1B70944	Assby.
	Mute Switch	40A70931	
	Tone Switch	40B71383	
	P.B. Assembly	1K73625	
	Spark Plate Assby.	1X75194	

CHASSIS—BOTTOM VIEW





NOTE: OZ4 TUBE IN SET WHEN VOLTAGE AND RESISTANCE READINGS WERE TAKEN.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.2 V.DC	0V.	100V.DC	5.9V.DC	207V.DC
2	6SA7GT	0V.	0V.	207V.DC	100V.DC	-25V.DC	0V.	5.9V.DC	-.3V.DC
3	6SK7GT	0V.	0V.	0V.	-.4V.DC	0V	100V.DC	5.9 V.DC	213V.DC
4	6SQ7GT	0V.	-7.V.DC	0V.	-15V.DC	-.3V.DC	90V.DC	5.9 V.DC	0V.
5	6V6GT	207V.DC	0V.	228V.DC	213V.DC	-8.4V.DC	-3.2V.DC	5.9 V.DC	0V.
6	OZ4/6X5GT	0V.	0V.	310V.AC	-15V.DC	310V.AC	0V.	5.9 V.DC	240V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	2.2 MEG.	0Ω	90KΩ	.3Ω	80KΩ
2	6SA7GT	0Ω	0Ω	80KΩ	90KΩ	50KΩ	.3Ω	.3Ω	1.8MEG.
3	6SK7GT	0Ω	0Ω	0Ω	1.7MEG.	0Ω	90KΩ	.3Ω	80KΩ
4	6SQ7GT	3.1 MEG.	5 MEG.	0Ω	480KΩ	825KΩ	550KΩ	.3Ω	0Ω
5	6V6GT	80KΩ	0Ω	80KΩ	80KΩ	185KΩ	45Ω	.3Ω	0Ω
6	OZ4/6X5GT	0Ω	0Ω	510Ω	210Ω	480Ω	INF.	.3Ω	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

At the request of the manufacturer stage gain measurements are not included.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

467-20

NATIONAL UNION
MODEL G-619

NATIONAL UNION
MODEL G-619

NATIONAL UNION MODEL G-619

TRADE NAME MANUFACTURER	National Union Model G-619 "Presentation" National Union Radio Corp., Newark 2, New Jersey
TYPE SET TUBES (SIX)	AC - DC Superheterodyne - Self Contained Loop Antenna Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY TUNING RANGE—BROADCAST	105-125 Volts AC-DC 535-1620KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully open and set pointer at last punch mark at right end of dial. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	High freq. end (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
200 MMF.	High side to ext. ant. lead. Low side to chassis.	1620KC	"	"	A5	Adjust for maximum output.
200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: NATIONAL UNION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE-TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL UNION PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		2N521	DHN-2x50-150	EL-25	PRSA150-40-40	EZ5515	Filter - Red
B	50	150							" - Yellow
8	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	35L6 Plate Bypass
10	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
11	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	" "
12	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
13A	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter *
B	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.25	400		TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolating
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
16	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter *
17	220	500		MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Grid Bypass
18	10	500		MC215	M0.5-41	MS-41	1469-00001	5W5Q1	Fixed Trimmer
19	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
20	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

*Used in early production

CONTROLS

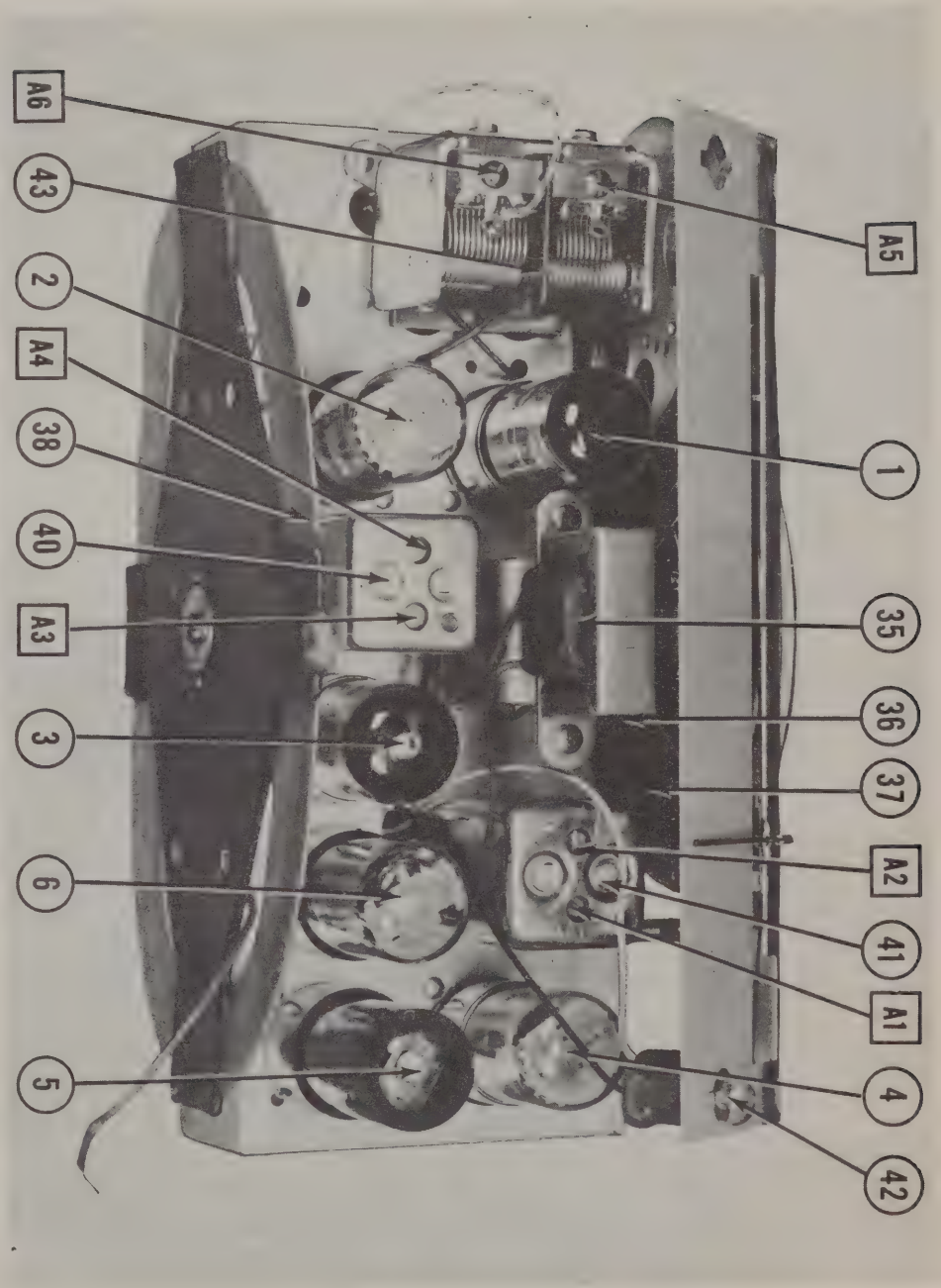
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL UNION PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	650.504E	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NAT. UNION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
22	330Ω	½		BTS-330	Or.-Or.-Red RF Plate Load
23	4700Ω	½		BTS-4700	Yl.-Vi.-Red Mixer Grid
24	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
25	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
26	1000Ω	½		BTS-1000	Br.-Blk.-Red IF Decoupling
27	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28A	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. 1st AF Grid - See Note 1
B	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid - See Note 2
29	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
31	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Output Cathode
32	1200Ω	2		BT-2-1200	Br.-Red-Red Filter
33	33Ω	½		BW-½-33	Or.-Or.-Blk. Surge Limiter
34	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating
35	150Ω	1		BT-1-150	Br.-Grn.-Br. Pilot Light Shunt-See Note 3

Note 1 - Used in early production
Note 2 - Used in later production
Note 3 - Not used in all models

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		NATIONAL UNION PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
36	1850Ω	3.1Ω	140Ω	.5Ω		A-3876	T-22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL UNION PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 3.1Ω		ST-106 Mod. P6-W		
38	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

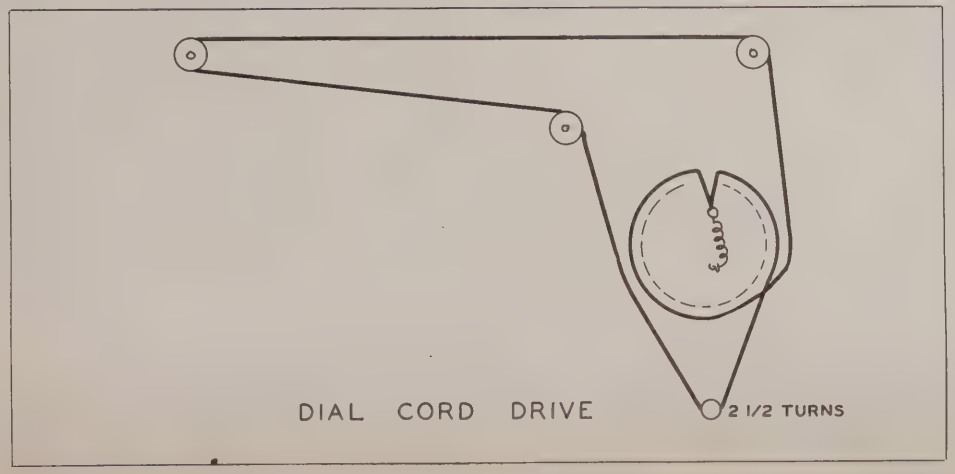
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	NAT. UNION PART No.	MEISSNER PART No.	
39	Loop Ant.	0Ω	1.1Ω	LL-11		
40	Osc. Coil		5.5Ω	AL02	14-1040	
41	Input IF	16.5Ω	15Ω	TM2-1	16-6658	
42	Output IF	15Ω		TM2-3	16-6670	

DIAL LIGHT

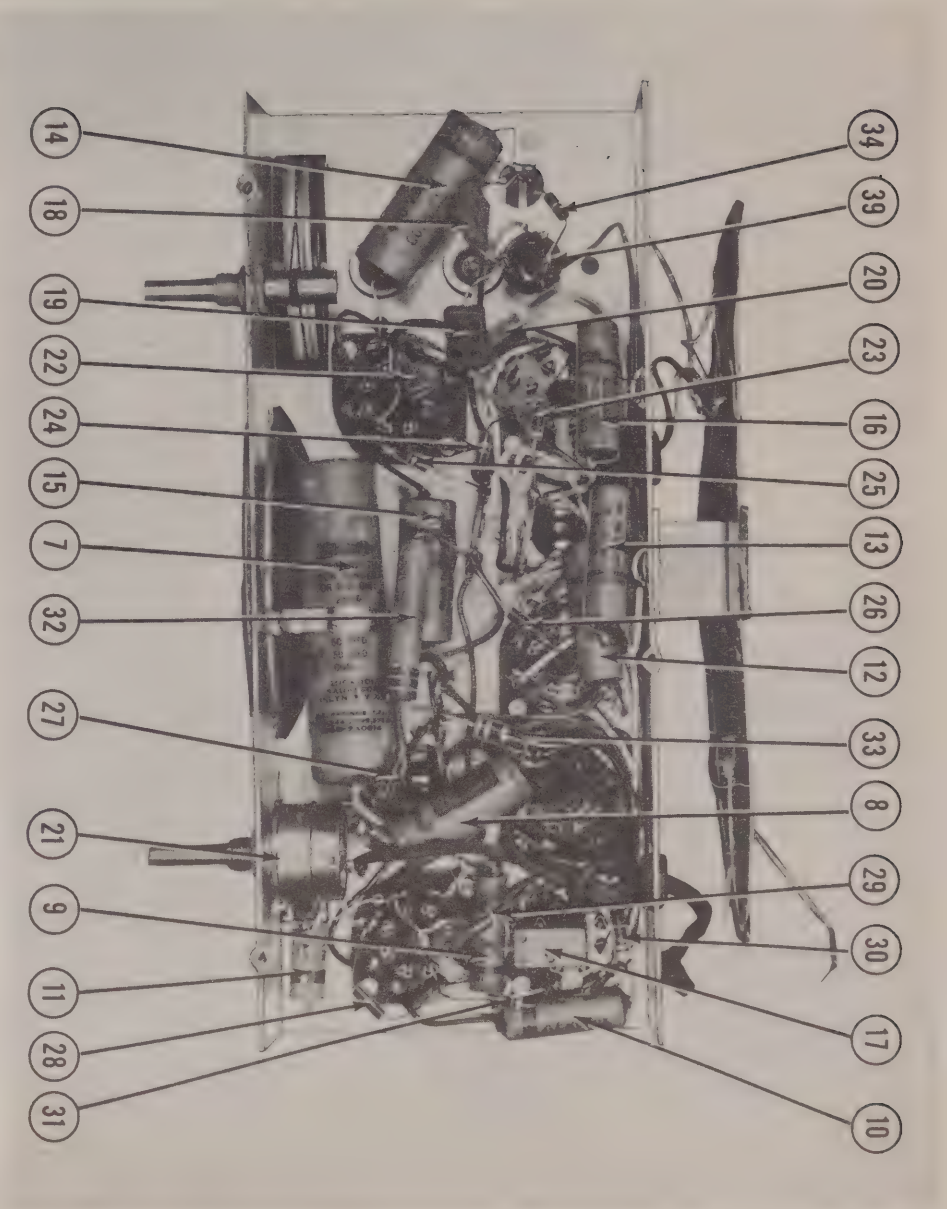
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					NAT. UNION PART No.		
43	Bayonet	6-8	0.2	White			Type 51

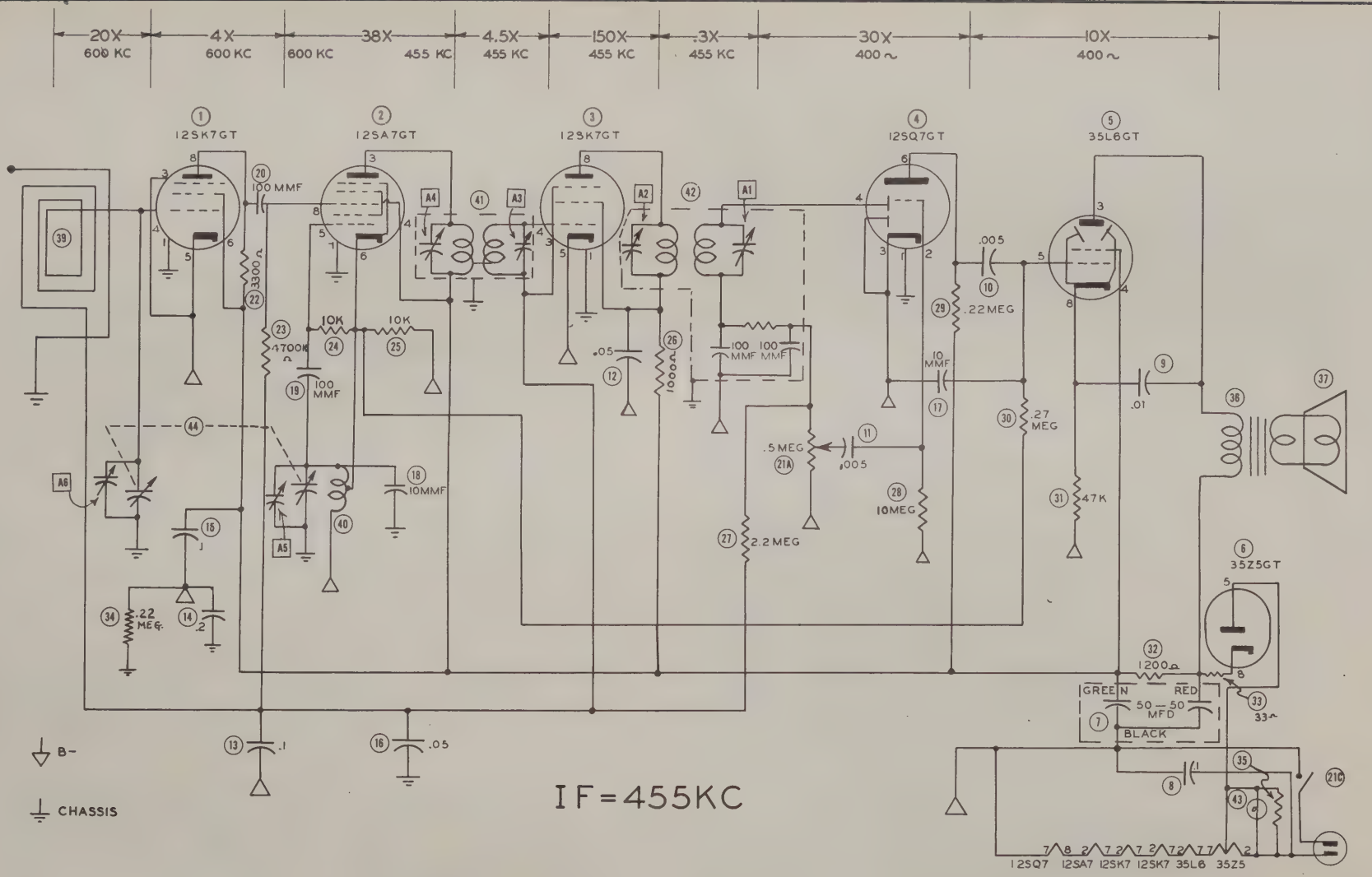
MISCELLANEOUS

ITEM No.	PART NAME	NAT. UNION PART No.	NOTES
44	Tuning Cap.		2 Gang Variable Cap.



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	26.5V.AC	0V.	-.82V.DC	0V.	71V.DC	39V.AC	44V.DC
2	12SA7GT	0V.	13V.AC	71V.DC	71V.DC	-4.4V.DC	0V.	26.5V.AC	-.82V.DC
3	12SK7GT	0V.	39V.AC	-.82V.DC	-.82V.DC	0V.	62V.DC	52V.AC	62V.DC
4	12SQ7GT	0V.	-.9V.DC	0V.	-.5V.DC	0V.	55V.DC	0V.	13V.AC
5	35L6GT	0V.	52V.AC	105V.DC	71V.DC	-1V.DC	-2.2V.DC	87V.AC	1.45V.DC
6	35Z5GT	0V.	117V.AC	114V.AC	0V.	114V.AC	0V.	87V.AC	112V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	215 KΩ	23Ω	0Ω	2.6MEG.	0Ω	35KΩ	34Ω	38KΩ
2	12SA7GT	215 KΩ	12Ω	35KΩ	35KΩ	18.5KΩ	.5Ω	23Ω	2.6MEG.
3	12SK7GT	215 KΩ	34Ω	2.6MEG.	2.6MEG.	0Ω	36KΩ	45Ω	36KΩ
4	12SQ7GT	215 KΩ	10MEG.	0Ω	550KΩ	0Ω	255KΩ	0Ω	12Ω
5	35L6GT	INF.	45Ω	35KΩ	35KΩ	330KΩ	96KΩ	73Ω	45Ω
6	35Z5GT	INF.	100Ω	97Ω	INF.	97Ω	INF.	73Ω	35KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RCA VICTOR
MODELS 54B1, 54B1-N, 54B2, 54B3

RCA VICTOR
MODELS 54B1, 54B1-N, 54B2, 54B3

RCA VICTOR MODEL 54B1

TRADE NAME	RCA Victor Models 54B1, 54B1-N, 54B2, 54B3 (Ch. No. RC589)
MANUFACTURER	Radio Corp. of America, RCA Victor Div., Camden, N. J.
TYPE SET	Battery Operated Personal Portable Superheterodyne Receiver Self Contained Loop Ant.
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY	1.5 Volt "A" Battery (RCA Type VS036 or equivalent), 67½ Volt "B" Battery (RCA Type VS016 or equivalent)
RATING	245 MA @ 1.5V DC - 8 MA @ 67½ V DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS

Set volume control at maximum and output from signal generator no higher than is necessary to obtain ouput reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD.	High side to stator of ant. section of variable. Low side of chassis.	455KC	Quiet point near 1600KC	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output.
200 MMF.	Loop	1600KC	High freq. end.	"	A5	Connect output of signal generator through a 200 MMF. capacitor to a loop of one turn 6 x 3½ inches. Place about 1½ inches from receiver loop. Radiate signal and adjust for maximum output.
200 MMF.	"	1500KC	Tune for maximum output.	"	A6	"
200 MMF.	"	600KC	"	"	A7	Rock variable and adjust for maximum output. Recheck A5 at 1600KC and A6 at 1500KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	60	36718	TC42	M-10-150	UT-121	PRS150-12	BR1215	Pwr. Supp. Bypass
6	.005	600	70627	TP408	S-6-005	TC-25	684-005	DT6D5	3S4 Plate Bypass
7	.002	150	70454	MT107	TTF-1-002			ZY4D2	Audio Coupling
8	.02	100	70453	MT127	TTF-1-02			ZY1S2	Audio Screen Bypass
9	.05	400	71013	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
10	.002	150	70454	MT107	TTF-1-002			ZY4D2	Audio Coupling
11	.02	100	70453	MT127	TTF-1-02			ZY1S2	Screen Bypass
12	33		33111						IF Bypass Vol. Cont.
13	82		65405						IF Bypass Diode
14	56		60954						Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15	2 Meg.	1	70439				Volume Control

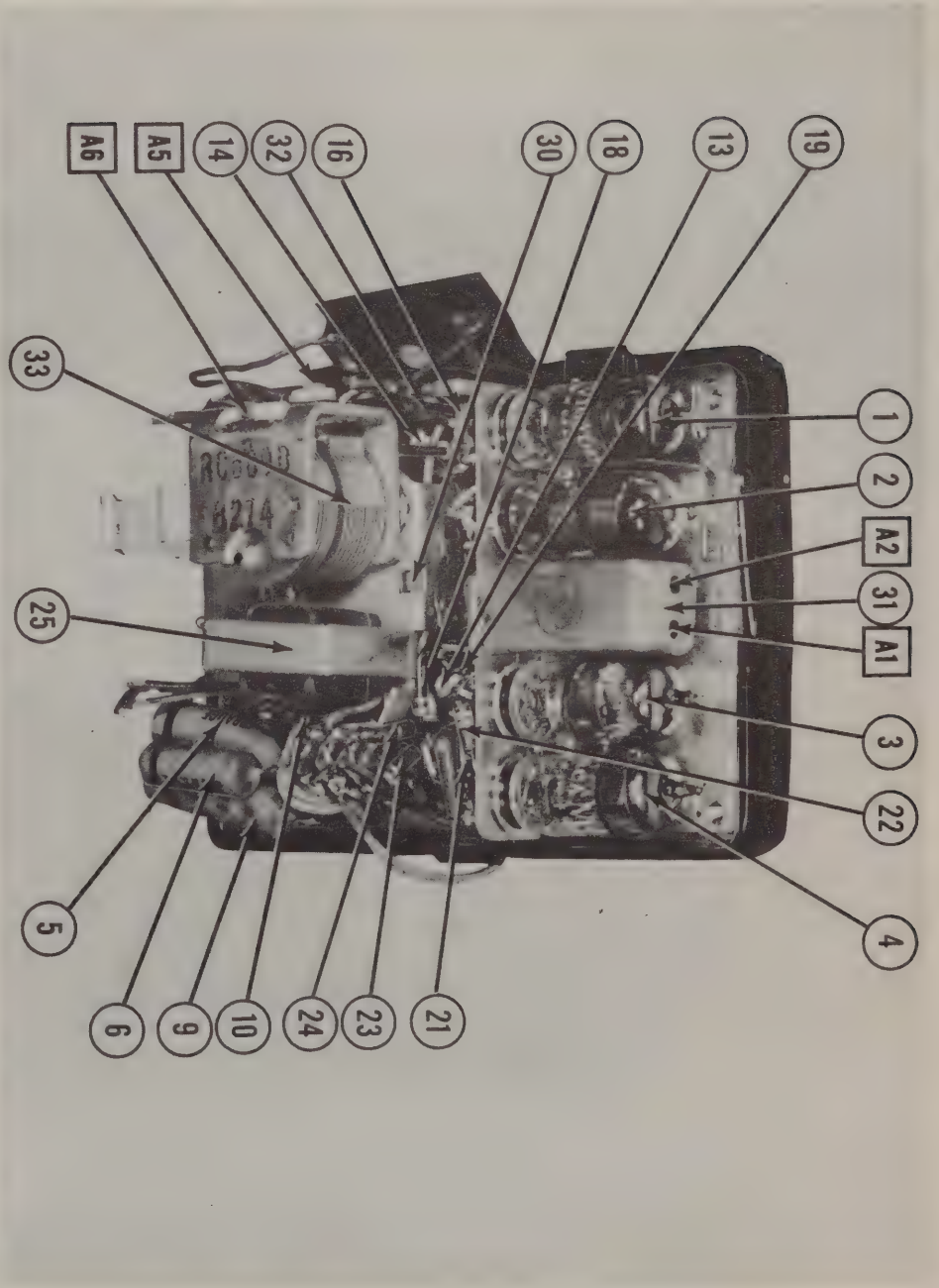
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
16	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl. Osc. Grid
17	15KΩ	½	36714	BTS-15K	Br.-Grn.-Or. Screen Dropping
18	3.3 Meg.	½	12928	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	68KΩ	½	14138	BTS-68K	Blue-Gray-Or. IF Filter
20	10 Meg.	½	30992	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
21	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
22	4.7 Meg.	½	30931	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Screen Dropping
23	3.3 Meg.	½	12928	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
24	820Ω	½	14076	BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
25	6700Ω	12Ω	600Ω	2.7Ω	70440		T-22S46*	*Bend one flange down and solder unit to chassis.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.		INSTALLATION NOTES
26	FIELD PM	VC IMP. 12Ω	70428			
27	CONE DIA. 1¼"x2½"	VC DIA. 7/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
28A	Loop Ant.		3Ω	70447		Black Cabinet
B	Loop Ant.		3Ω	70985		Brown Cabinet
29	Osc. Coil	1Ω	4Ω	70443		
30	Input IF	21Ω	17.5Ω	70442		
31	Output IF	40Ω	40Ω	70437		

MISCELLANEOUS

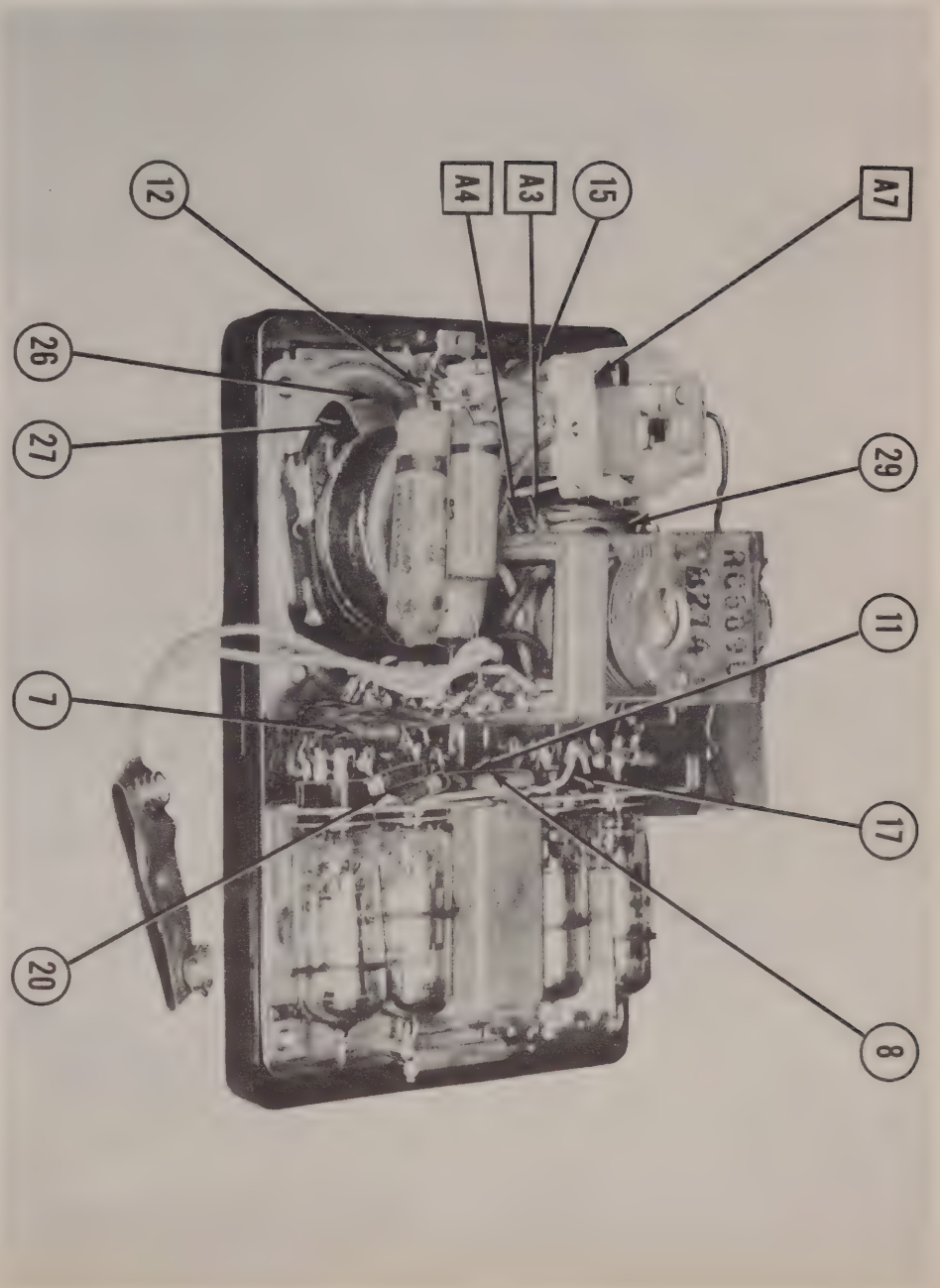
ITEM No.	PART NAME	RCA PART No.	NOTES
32	Power Switch	70430	
33	Tuning Cap.	70436	2 Gang Variable Cap.
	Lid Hinge	70434	Model 54B1 Black
	" "	70984	" 54B2 Brown
	Battery Holder	70441	
	Knob	70424	Tuning
	"	70432	Volume
	Case Lid	70450	Model 54B1 Black
	" "	70986	" 54B2 Brown
	Case Bottom	70456	" 54B1 Black
	" "	70988	" 54B2 Brown
	Case Center	70455	" 54B1 Black
	" "	70987	" 54B2 Brown
	Handle	70459	" 54B1 Black
	"	70989	" 54B2 Brown

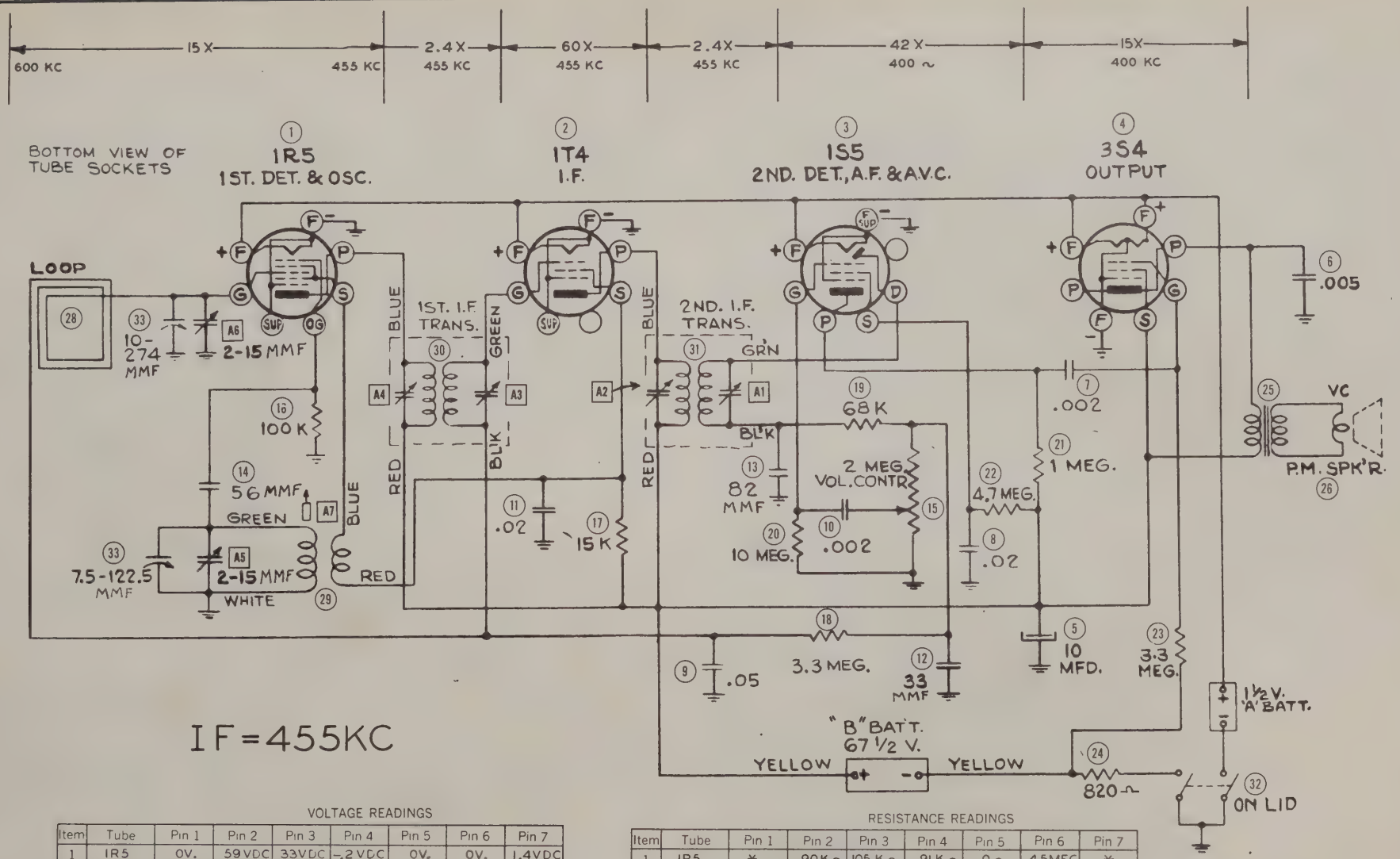
BATTERIES

This personal receiver is so designed that batteries cannot be connected incorrectly and may be easily replaced without tools.

The two batteries are accessible upon removing the back cover. The button located beneath the handle, when pressed, unlocks the back cover. CAUTION - Raise the lock end of the back cover only enough to clear the case edge before sliding the cover toward the strap handle to release the opposite end from the two projecting case lugs that hold it down. Failure to observe this precaution may result in breaking the leg slots from the cover.

CHASSIS—BOTTOM VIEW





IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	59VDC	33VDC	-.2VDC	0V.	0V.	1.4VDC
2	1T4	0V.	59VDC	33VDC	59VDC	0V.	0V.	1.4VDC
3	1S5	0V.	-.02VDC	-.02VDC	13VDC	17VDC	0V.	1.4VDC
4	3S4	1.4VDC	57VDC	-5VDC	59VDC	0V.	57VDC	1.4VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	90KΩ	105 KΩ	91 KΩ	0Ω	4.5MEG	*
2	1T4	*	90KΩ	105 KΩ	90KΩ	0Ω	4.5MEG	*
3	1S5	*	1.9 MEG	1.9 MEG	5 MEG	1.1 MEG	10 MEG	*
4	3S4	*	90KΩ	3.3MEG	90KΩ	*	90KΩ	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

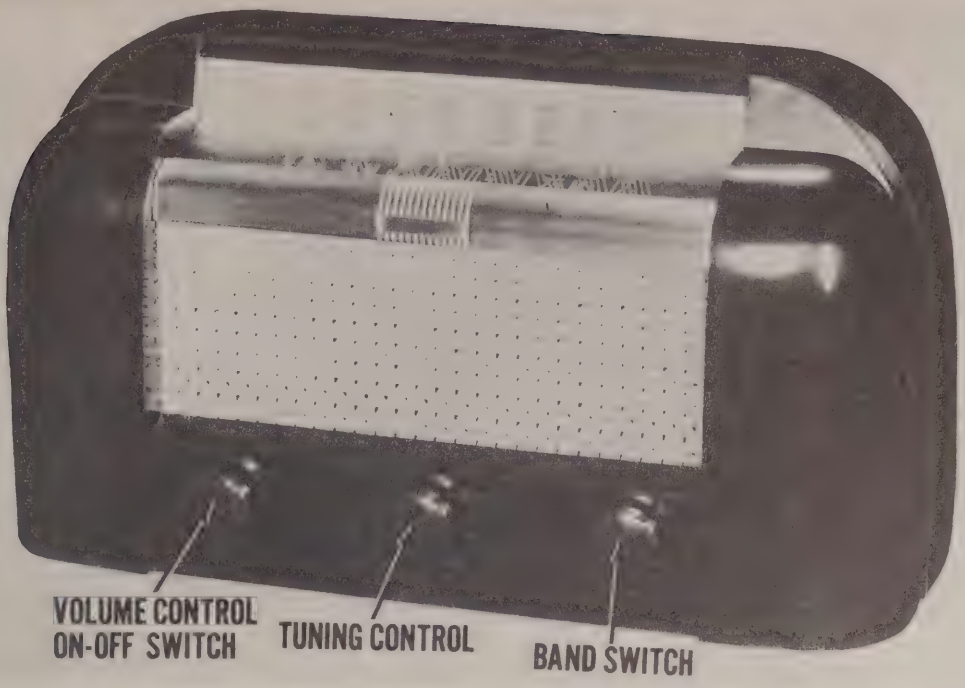
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is grounded.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

RCA VICTOR
MODELS 66X1, 66X2, 66X3,
66X4, 66X9



RCA VICTOR MODEL 66X1

TRADE NAME	RCA Victor Models 66X1, 66X2, 66X3, 66X4, 66X9
MANUFACTURER	Radio Corporation of America, RCA Victor Division-Camden, New Jersey
TYPE SET	AC - DC 2 Band Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SG7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC — RATING .255 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC — **SHORT WAVE** 9.0 - 12.0MC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of generator and B-. Volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 of 12SA7. Low side to B-.	455KC	BC	High freq. end of dial. (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
200 MMF.	High side to ext. ant. Low side to B-.	"	"	Low freq. end of dial. (Variable fully closed)	"	A5	Adjust for minimum output
200 MMF.	"	1600KC	"	High freq. end of dial. (Variable fully open)	"	A6	Adjust for maximum output
200 MMF.	"	1400KC	"	Tune for maximum output.	"	A7	" " " "
200 MMF.	"	600KC	"	"	"	A8	Rock dial and adjust for maximum output. Recheck A6 at 1600KC and A7 at 1400KC.
400 ohms.	"	12.0MC	SW	High freq. end of dial (Variable fully open)	"	A9	Adjust for maximum output. If signal cannot be heard, set A9 approximately ½ turn from fully closed and adjust A11 for maximum output.
400 ohms	"	11.5MC	"	Tune for maximum output.	"	A10	Adjust for maximum output.
400 ohms	"	9.2MC	"	"	"	A12	Adjust for maximum output. Repeat last two steps until no further increase can be obtained.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SG7	12SG7	8BK	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	70408	2N520	M-50+30-150	TA-530	PRS150-40-40	BRD3515	Filter-95676-1
B	50	150							" -Red Dot
8	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
9	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Rect. Bypass
10	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	35L6 Plate Bypass
11	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
12	.002	400		TP406	S-6-002	TC-22	484-002	DT6D2	Tone Compensation
13	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
14	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
16	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Line Isolating
17	330	500		MC241	MO.5-33	MS-33	1468-0003	5W5T3	Audio Plate Bypass
18	56	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
19	108	300							Fixed Trimmer SW
20	22	500		MC220	MO.5-425	MS-42	1468-000025	5W5Q2	RF Coupling
21	33	500			MOS.5-43	MS-43		5R5Q3	Wave Trap
22	146	300							Fixed Trimmer SW

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	1	97500-117	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

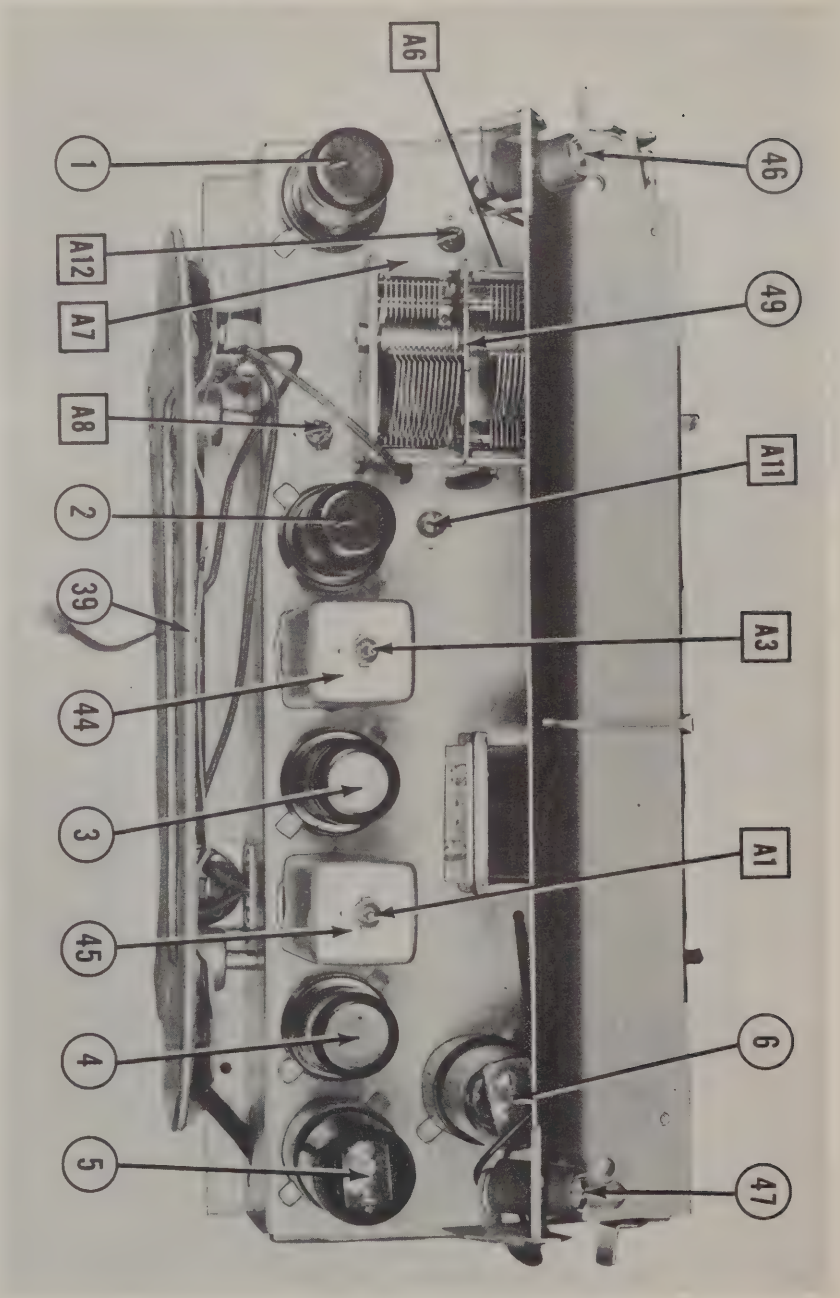
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
24	12KΩ	½		BTS-12K	Br.-Red-Or. Peaking Assembly
25	3900Ω	½		BTS-3900	Or.-White-Red RF Plate Load
26	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Grid
27	33KΩ	½		BTS-33K	Or.-Or.-Or. Osc. Grid
28	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	47KΩ	½		BTS-47K	Yl.-Vi.-Or. IF Filter
30	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
31	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
32	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
33	120Ω	½		BW-½-120	Br.-Red-Br. Output Cathode
34	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating
35	1200Ω	1		BTA-1200	Br.-Red-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
36	2300Ω	4.1Ω	252Ω tapped @ 10Ω	.75Ω	922225-4	A-3876*			*Bend mounting tabs down, insert in mounting slots and twist. Add additional filter to reduce hum level.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
37	PM	4.1Ω	922258-2P			
	CONE DIA.	VC DIA.				
38	4"x6"	1½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

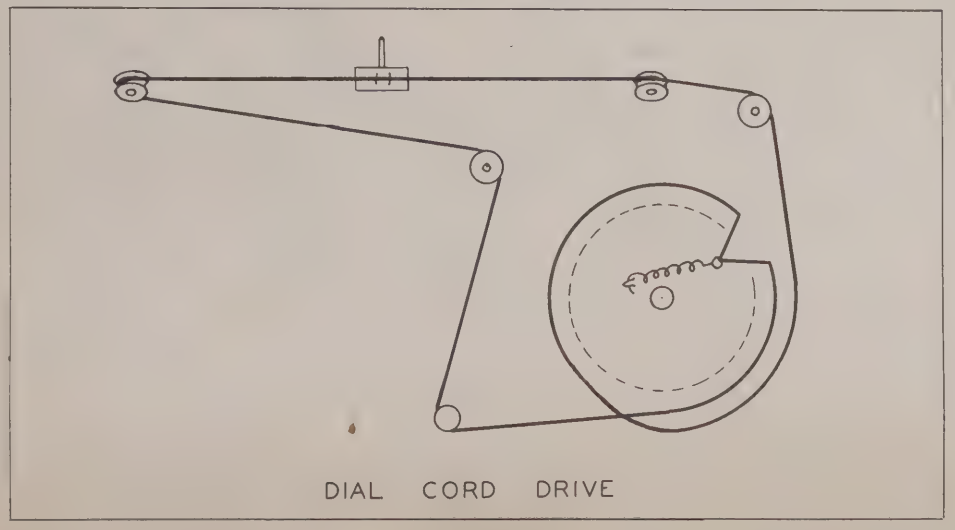
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
39	Loop Ant.	.3Ω	1.5Ω			
40	SW Ant.Coil		0Ω			
41A	RF Coil	2.5Ω				Items 41A, 41B on same coil form
B	Wave Trap	24Ω				
42	Coil					
42	BC Osc.Coil	1Ω	4.5Ω			
43	SW Osc.Coil	0Ω	0Ω			
44	Input IF	10.5Ω	10Ω		16-6666	
45	Output IF	13.5Ω	13Ω		16-6670	Item 29 may be omitted when using Meissner 16-6670

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.		INSTALLATION NOTES
46	Bayonet	3.2	0.16	White			Type 1490
47	"	3.2	0.16	"			" "

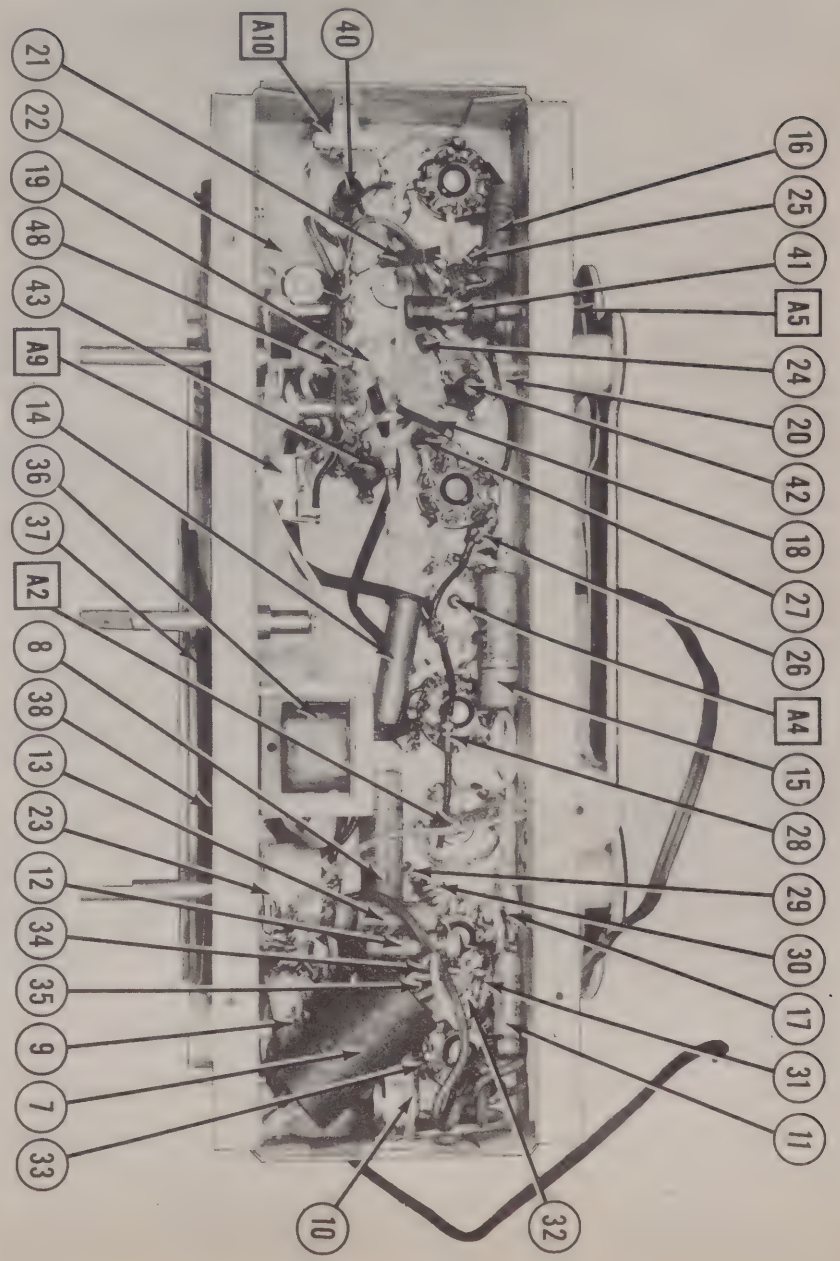
MISCELLANEOUS

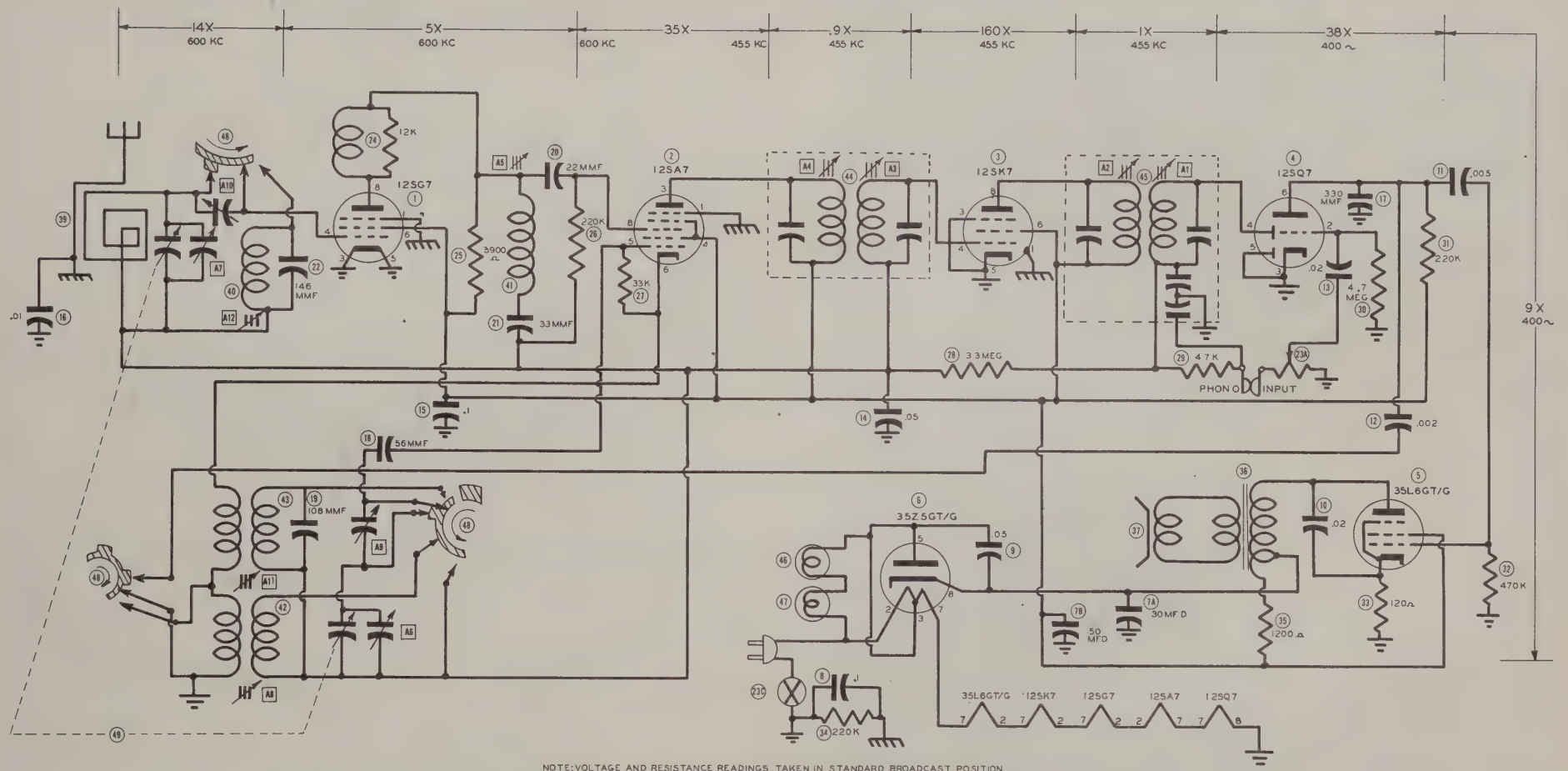
ITEM No.	PART NAME	RCA PART No.	NOTES
48	Switch		Tone-Range
49	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN STANDARD BROADCAST POSITION

IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	0V	25V. AC	0V	-.3V. DC	0V	79V. DC	37V AC	55V. DC
2	12SA7	0V	25V. AC	79V. DC	79V. DC	-4.8V. DC	0V	12.5VAC	-.2V. DC
3	12SK7	0V	37V. AC	0V	-.3V. DC	0V	79V. DC	48.8VAC	79V. DC
4	12SQ7	0V	-3V. DC	0V	-.2V. DC	0V	55V. DC	12.5VAC	0V
5	35L6GT	0V	48.8VAC	111V. DC	79V. DC	0V	0V	87 V. AC	4 6V. DC
6	35Z5GT	0V	117V. AC	113V. AC	0V	113V. AC	117V. DC	87V. AC	1.8V. DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	225KΩ	24Ω	0Ω	4 MEG	0Ω	105KΩ	36Ω	109KΩ
2	12SA7	225KΩ	24Ω	105KΩ	105KΩ	31KΩ	.5Ω	12.5Ω	4.2MEG
3	12SK7	225KΩ	36Ω	0Ω	4MEG	0Ω	105KΩ	47Ω	105KΩ
4	12SQ7	225KΩ	4 MEG	0Ω	620KΩ	0Ω	320KΩ	12.5Ω	0Ω
5	35L6GT	1 NF	47Ω	105KΩ	105KΩ	430KΩ	1 NF	80Ω	120Ω
6	35Z5GT	1 NF	105Ω	102Ω	1 NF	102Ω	105KΩ	80Ω	105KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RayEnergy
MODEL AD

RayEnergy
MODEL AD

RayEnergy MODEL AD

TRADE NAME	RayEnergy Model AD
MANUFACTURER	RayEnergy Radio & Television Corp., 32 W. 22nd St., New York 10, N.Y.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC
TUNING RANGE—BROADCAST	530-1670KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #8 (grid) of 12SA7. Low side to chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMF.	High side to ant. lead. Low side to chassis.	1670KC	"	"	A5	" " " "
200 MMF	High side to ant. lead. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RayEnergy PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RayEnergy PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150		2N513	M-30+20-150	TA-230	PRSA150-40-40	BRL-3315	Filter - Red
B	20	150							" - Blue
6A	30	150		2N513	M-2x30-150	TA-330	PRSA150-40-40	BRL-3315	Filter *
B	30	150							"
C	20	150		TC45	M-20-150	UT-201	PRS150-20	BR2015	"
7	24	150		TC47	M-24-150	UT-301	PRS150-24	BR3015	Cath. Bypass
8	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Line Filter
9	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	50L6 Plate Bypass
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" "
12	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
13	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
14	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Vol. Cont.
15	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
16	1500	300		MC456	MW.5-215	1FM-215	1467-0015	1W5D15	Ant. Coupling

*Used in some models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RayEnergy PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	118-C-1	MR50	D11-133	M-58-S	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

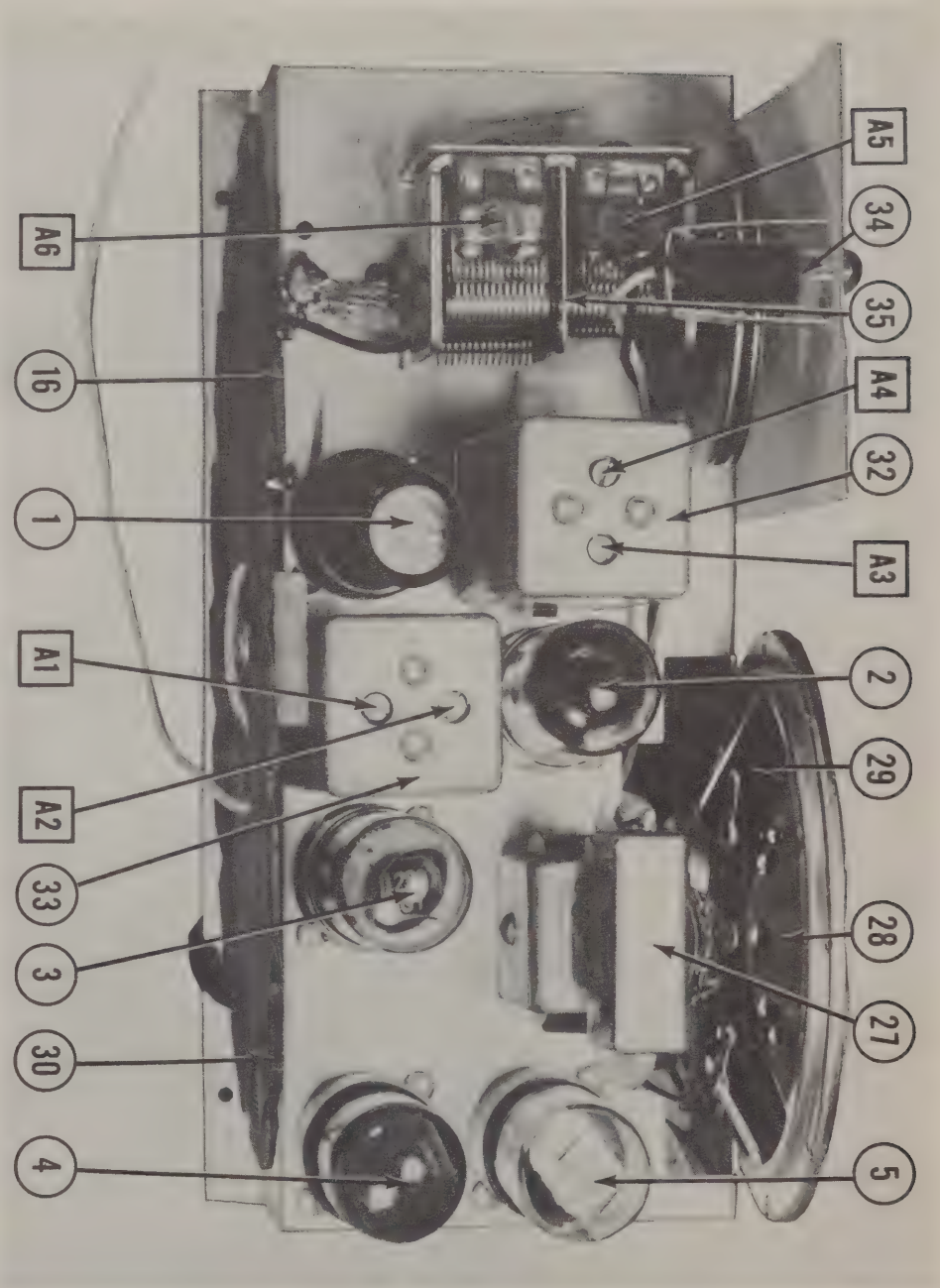
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RayEnergy PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	20KΩ	½		BTS-22K	Red-Blk.-Or. Osc. Grid
19	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AVC Network
20	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
21	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
22	240KΩ	½		BTS-220K	Red-Yl.-Yl. 1st AF Plate Load
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
25	200Ω	1		BW-1-180	Red-Blk.-Br. Filter - See Note 1
26	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter - See Note 1

Note 1 - Not used in all models

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RayEnergy PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
27	12000Ω	2.9Ω	150Ω	.66Ω		A-3876	T-2S845		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RayEnergy PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-450		Some models use PM type speaker
28	500Ω	2.9Ω		Mod. H5-S		
	CONE DIA.	VC DIA.				
29	4-1/2"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

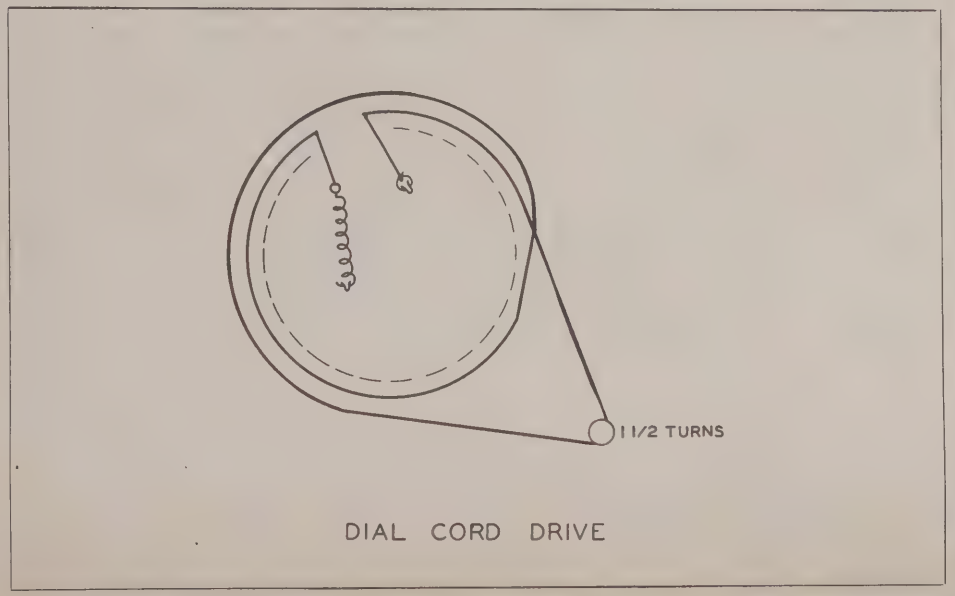
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RayEnergy PART No.	MEISSNER PART No.	INSTALLATION NOTES
30	Loop Ant.		1Ω			
31	Osc. Coil		5.8Ω		14-1040	
32	Input IF	23.8Ω	23.8Ω		16-6655	
33	Output IF	23Ω	23.5Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RayEnergy PART No.		INSTALLATION NOTES
34	Bayonet	6-8	.15	Brown			Type 47

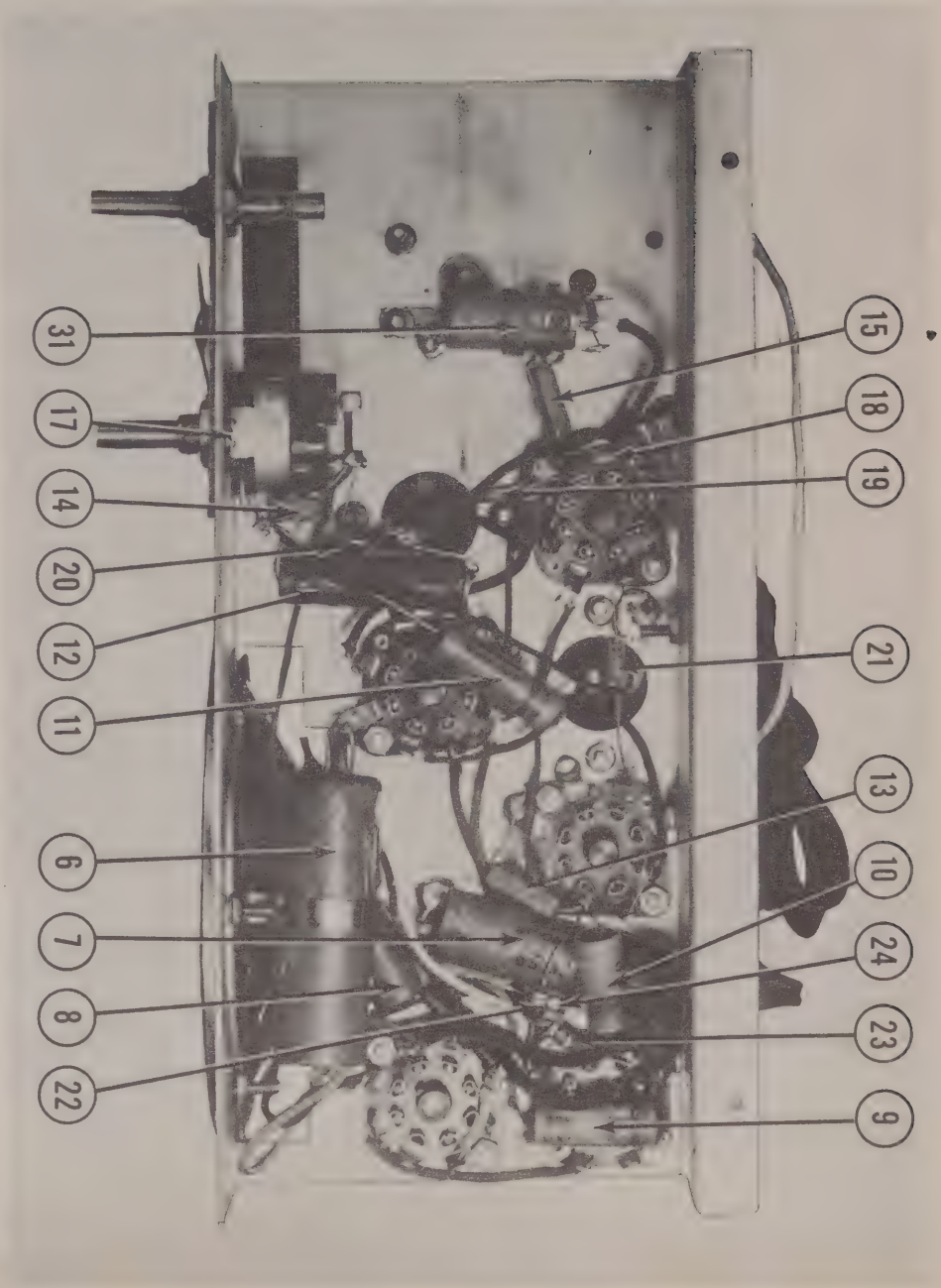
MISCELLANEOUS

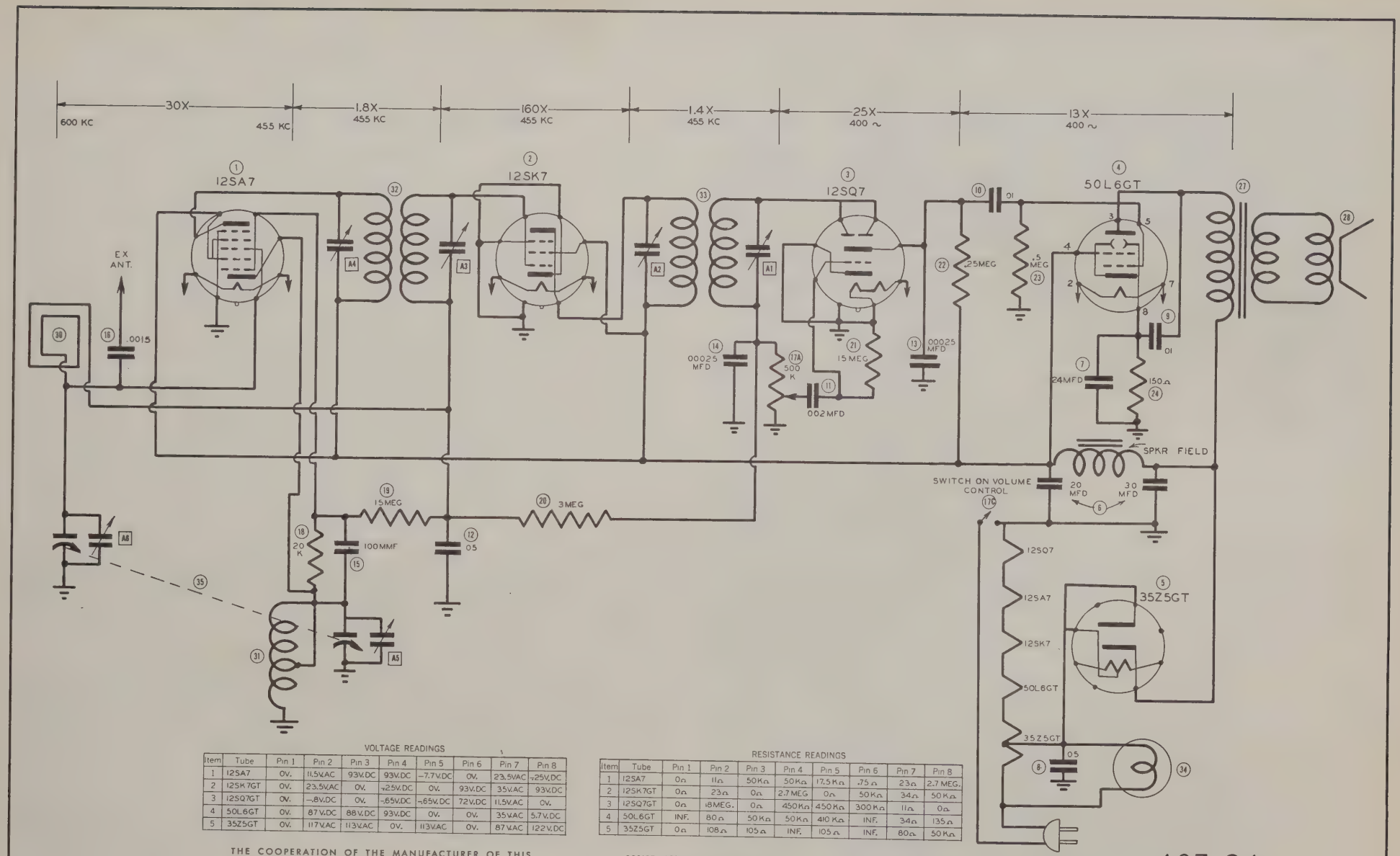
ITEM No.	PART NAME	RayEnergy PART No.	NOTES
35	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	11.5V.AC	93V.DC	93V.DC	-7.7V.DC	0V.	23.5VAC	+25V.DC
2	12SK7GT	0V.	23.5V.AC	0V.	+25V.DC	0V.	93V.DC	35V.AC	93V.DC
3	12SQ7GT	0V.	-.8V.DC	0V.	-.65V.DC	-.65V.DC	72V.DC	11.5V.AC	0V.
4	50L6GT	0V.	87 V.DC	88V.DC	93V.DC	0V.	0V.	35V.AC	5.7V.DC
5	35Z5GT	0V.	117V.AC	113V.AC	0V.	113V.AC	0V.	87 V.AC	122V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

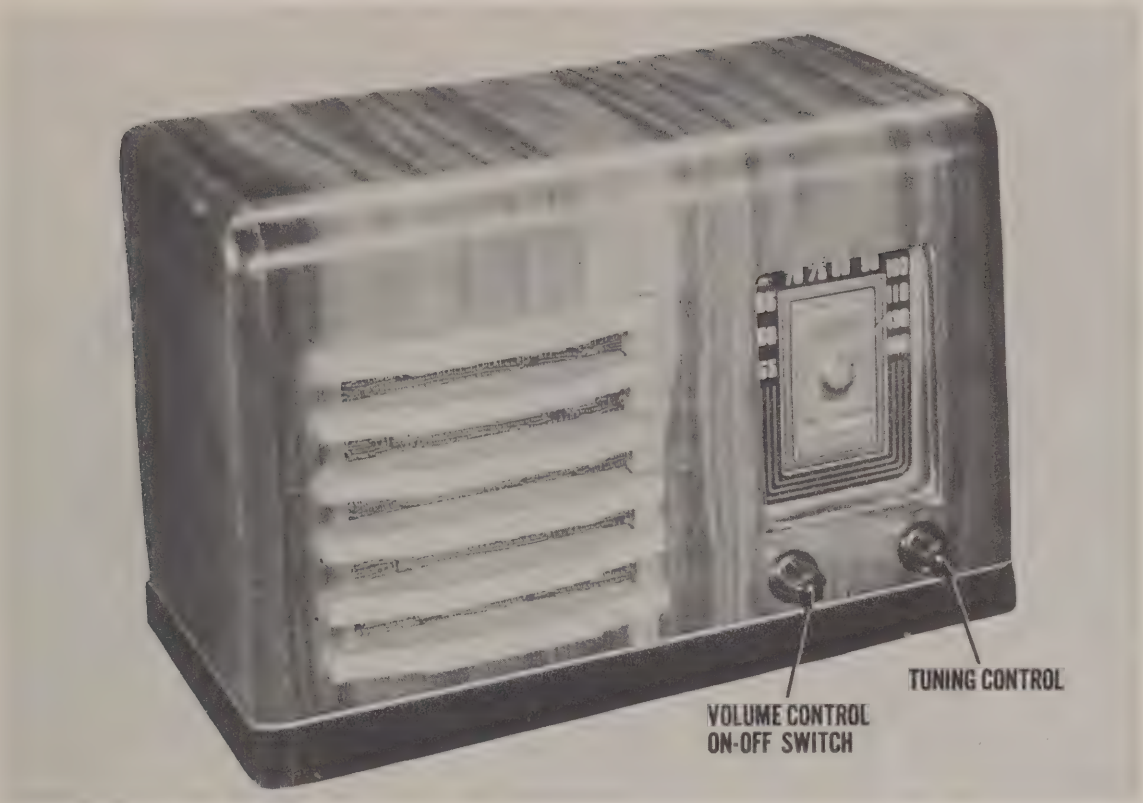
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	11Ω	50KΩ	50KΩ	17.5KΩ	.75Ω	23Ω	2.7 MEG.
2	12SK7GT	0Ω	23Ω	0Ω	2.7 MEG	0Ω	50KΩ	34Ω	50KΩ
3	12SQ7GT	0Ω	18MEG.	0Ω	450KΩ	450KΩ	300KΩ	11Ω	0Ω
4	50L6GT	INF.	80Ω	50KΩ	50KΩ	410KΩ	INF.	34Ω	135Ω
5	35Z5GT	0Ω	108Ω	105Ω	INF.	105Ω	INF.	80Ω	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



RayEnergy
MODEL AD4

RayEnergy
MODEL AD4

RayEnergy MODEL AD4

TRADE NAME	RayEnergy Model AD4
MANUFACTURER	RayEnergy Radio & Television Corp., 32W 22nd St., New York 10, N.Y.
TYPE SET	AC-DC Superheterodyne Receiver
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC
TUNING RANGE—BROADCAST	550-1650KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and the chassis. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #8 (grid) of 12SA7. Low side to chassis.	456KC	High freq.end	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMF.	High side to ant lead. Low side to chassis.	1650KC	"	"	A5	" " " "
200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "
200 MMF.	"	600KC	"	"	A7	Rock variable and adjust for maximum output. Recheck A5 and A6.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RayEnergy PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RayEnergy PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		2N511	M-2x40-150	TA-440	PRSA150-40-40	BRL4415	Filter
B	40	150							"
7	40	150		TC48	M-40-150	UT-401	PRS150-40	BR4015	"
8	50	50		TC39	M-50-50	TA-550	PRS50-50	BR505	Cath. Bypass
9	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	50L6 Plate Bypass
11	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" "
13	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
15	250	500		MC240	M0.5-325	1FM-325	1468-00005	5W5T25	IF Bypass Vol. Cont.
16	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
17	470	500		MC245	M0.5-35	1FM-35	1468-0005	5W5T5	AVC Filter
18	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Ant. Coupling
19	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Fixed Tuning

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RayEnergy PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	1	113-C-1	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

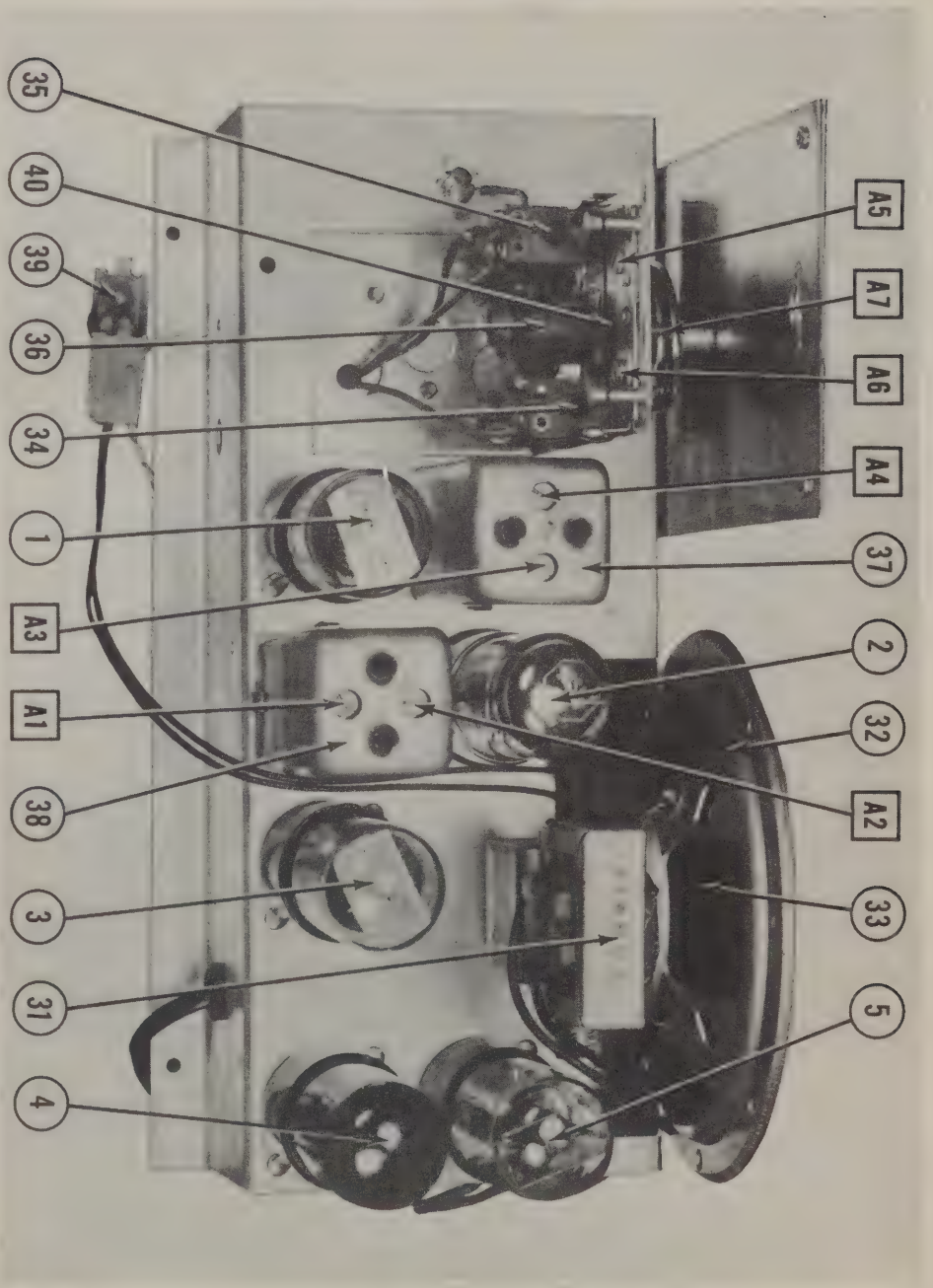
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RayEnergy PART No.	IRC PART No.	IDENTIFICATION CODES
21	27KΩ	½		BTS-27K	Red-Vl.-Or. Osc. Grid
22	12 Meg.	½		BTS-12 Meg.	Br.-Red-Blue AVC Network
23	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
24	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AVC Network
25	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
26	250KΩ	½		BTS-220K	Red-Grn.-Yl. 1st AF Plate Load
27	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
28	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
29	200Ω	1		BW-1-180	Red-Blk.-Br. Filter
30	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RayEnergy PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
31	1900Ω	3.1Ω	150Ω	.6Ω		A-3876*	T-22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RayEnergy PART No.	JENSEN PART No.		INSTALLATION NOTES
32	FIELD PM	VC IMP. 3.1Ω		ST-105 Mod. P5-X		
33	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

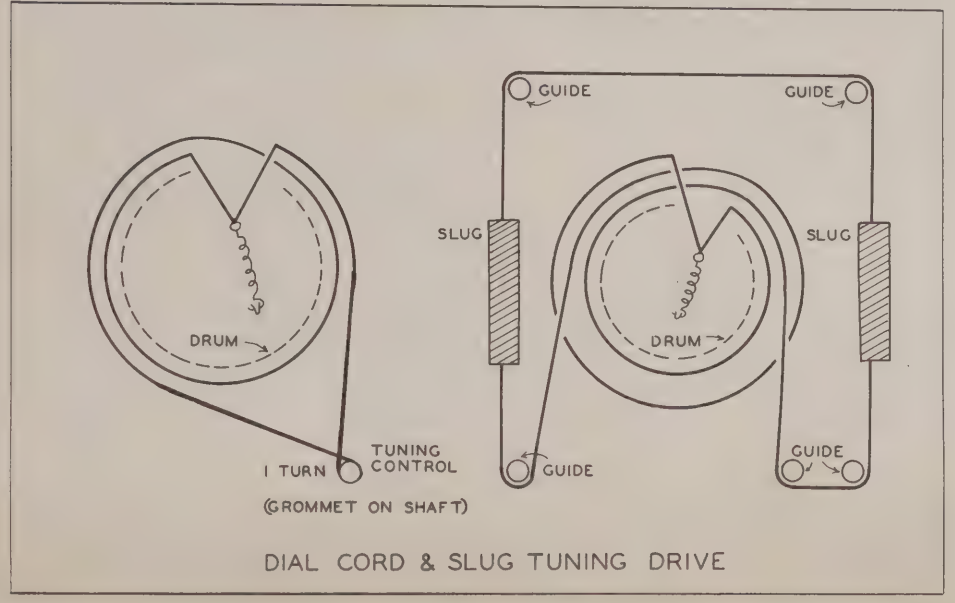
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RayEnergy PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
34	Ant. Coil		11.5Ω			Items 34 & 35 ganged together & slug tuned
35	Osc. Coil		3.8Ω			
36	Osc. Padder		3.8Ω			
37	Input IF	25Ω	25Ω		16-6658	
38	Output IF	23.6Ω	24Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RayEnergy PART No.		INSTALLATION NOTES
39	Bayonet	6-8	.15	Brown.			Type 47

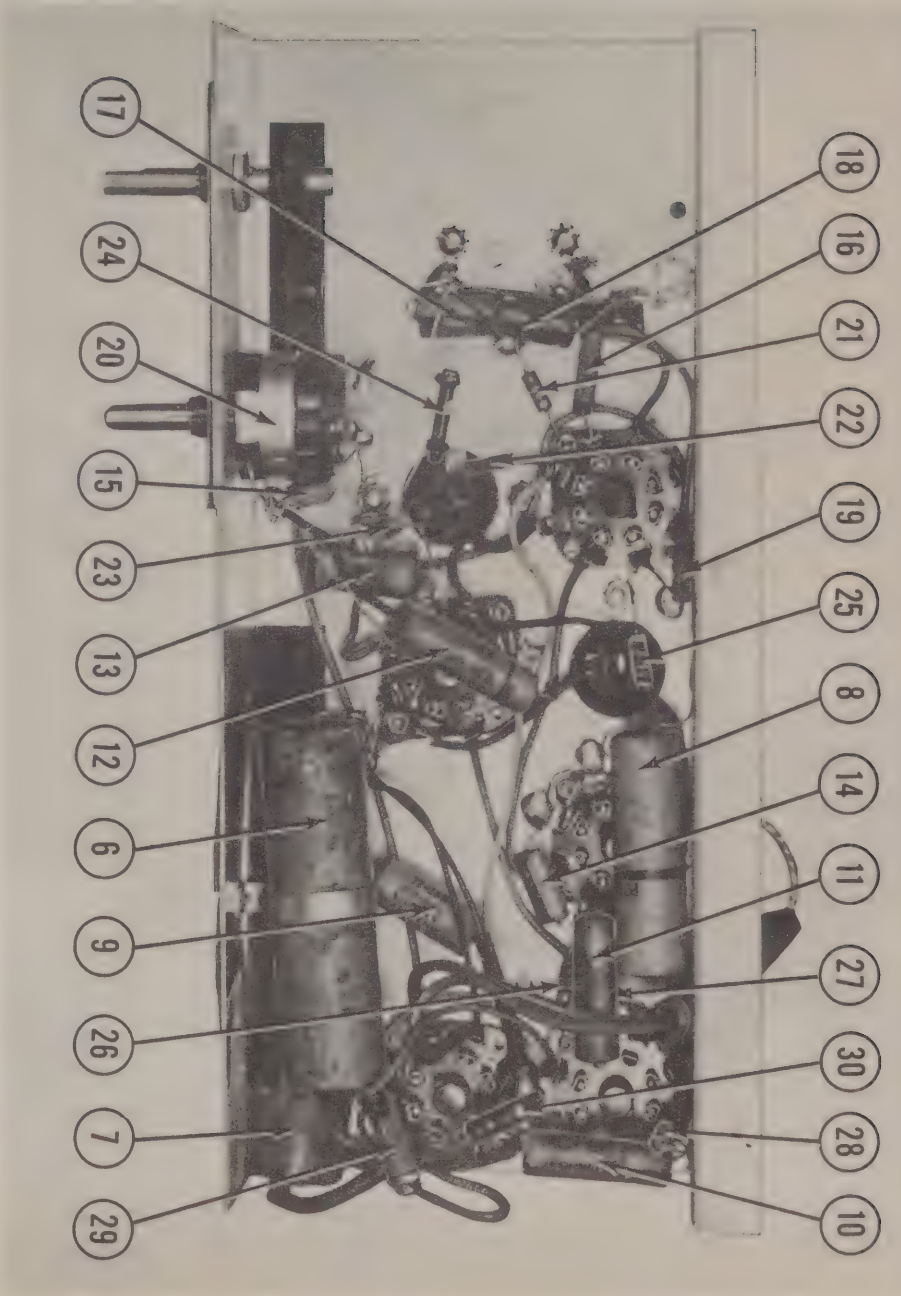
MISCELLANEOUS

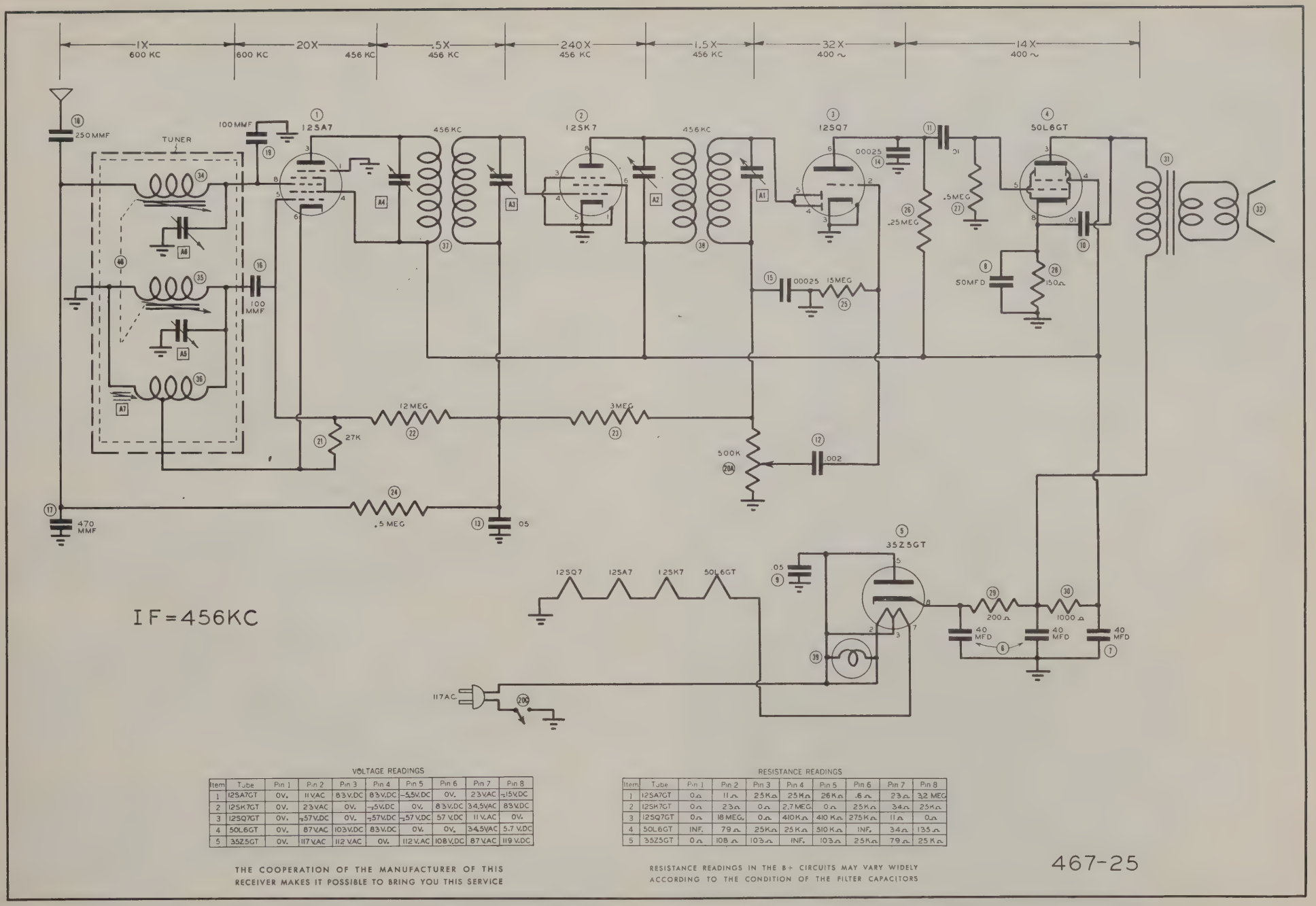
ITEM No.	PART NAME	RayEnergy PART No.	NOTES
40	Tuner Assby.		



DIAL CORD & SLUG TUNING DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	11 VAC	83 V.DC	83 V.DC	−5.5V.DC	0V.	23 VAC	−15V.DC
2	12SK7GT	0V.	23 VAC	0V.	−5V.DC	0V.	83 V.DC	34.5VAC	83 V.DC
3	12SQ7GT	0V.	−57 V.DC	0V.	−57V.DC	−57 V.DC	57 V.DC	11 V.AC	0V.
4	50L6GT	0V.	87 VAC	103V.DC	83 V.DC	0V.	0V.	34.5VAC	5.7 V.DC
5	35Z5GT	0V.	117 VAC	112 VAC	0V.	112 V.AC	108 V.DC	87 VAC	119 V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

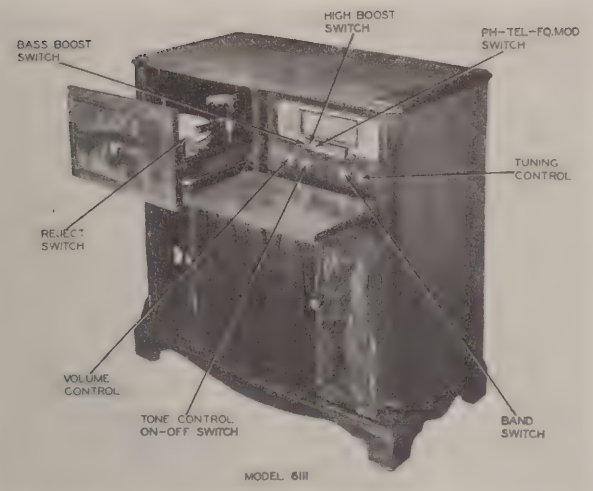
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	11Ω	25KΩ	25KΩ	26KΩ	.6Ω	23Ω	3.2 MEG
2	12SK7GT	0Ω	23Ω	0Ω	2.7 MEG.	0Ω	25KΩ	34Ω	25KΩ
3	12SQ7GT	0Ω	18 MEG.	0Ω	410KΩ	410 KΩ	275KΩ	11Ω	0Ω
4	50L6GT	INF.	79Ω	25KΩ	25KΩ	510 KΩ	INF.	34Ω	135Ω
5	35Z5GT	0Ω	108Ω	103Ω	INF.	103Ω	25KΩ	79Ω	25KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

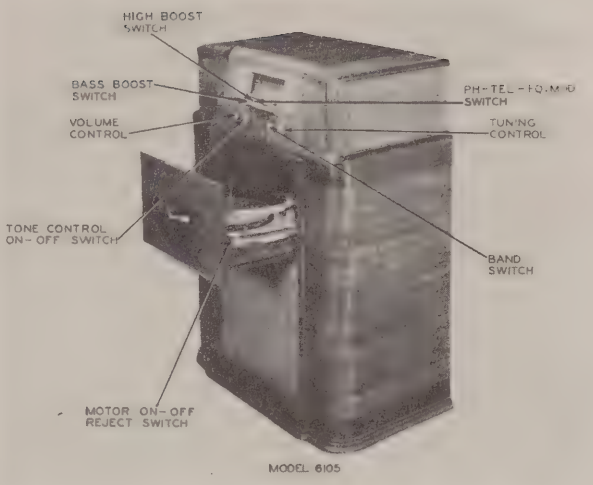
467-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



MODEL 6111



MODEL 6105

SILVERTONE
MODELS 6105, 6111

SILVERTONE
MODELS 6105, 6111

SILVERTONE MODELS 6105, 6111

TRADE NAME	Silvertone Models 6105 (Ch. No. 101.662-2B, 101.662-2D), 6111 (Ch. 101.662-3C)
MANUFACTURER	Sears, Roebuck and Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Combination Automatic Phono. - 2 Band Superheterodyne Receiver, Self Contained Loop Antenna & Automatic Tuning
TUBES(EIGHT)	Type, 7E6 Osc. & Bias Control, 7H7 Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6SQ7GT Phase Inverter, 2-6K6GT/G Power Output, 5Y3G Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .630 Amps. @ 117V AC
TUNING RANGE—BROADCAST	535-1750KC — **SHORT WAVE** 5.5-18.3MC

ALIGNMENT INSTRUCTIONS

Turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 6 (grid) of 7H7. Low side to chassis.	455KC	BC	Low freq. end (Variable fully closed)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMF.	High side to ant. terminal. Low side to chassis.	1750KC	"	High freq.end (Variable fully open).	"	A5	" " " "
200 MMF.	"	1410KC	"	Tune for maximum output.	"	A6,A7.	" " " "
200 MMF.	"	600KC	"	"	"	A8	Adjust for maximum output. Recheck A5 at 1750KC and A6 and A7 at 1410KC.
400 ohms	"	18.3MC	SW	High freq. end. (Variable fully open)	"	A9	Adjust for maximum output.
400 ohms	"	15.0MC	"	Tune for maximum output.	"	A10	Rock dial and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Osc. & Bias Con.	7E6	7E6	8W	
2	Converter	7H7	7H7	8V	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Phase Inverter	6SQ7GT	6SQ7GT	8Q	
6	Power Output	6K6GT/G	6K6GT/G	7S	
7	Power Output	6K6GT/G	6K6GT/G	7S	
8	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

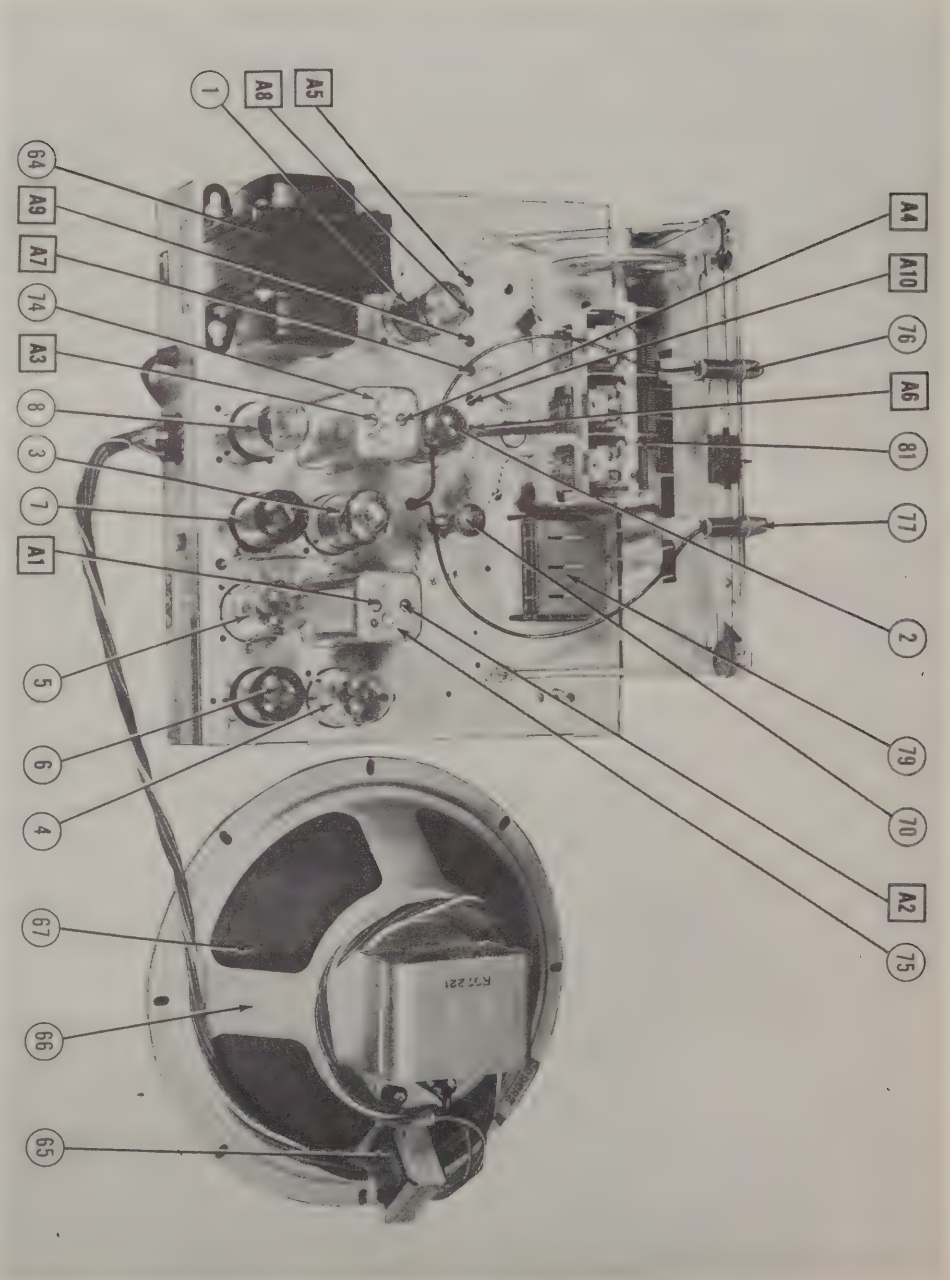
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9A	30	375	R45829	FP444*	DY-2x30-450†	EL-330†		BR3045	Filter - Yellow
B	30	275						BR3045	" - Red
10	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	6K6 Plate Bypass
11	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" " "
12	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
13	.005	400		TP407	S-6-005	TC-25	484-005	DT6D5	" "
14	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
16	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	Phono Shield Isolation
17	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
18	.008	400		TP450	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
19	.003	400		TP406	S-6-003	TC-23	484-003	DT6D3	" "
20	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
21	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Screen Bypass
22	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
23	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Cath. Bypass
24	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	7E6 Plate Decoupling
25	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Conv. Plate Bypass
26	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Conv. Screen Bypass
27	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
28	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	RF Coupling
29	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Diode Coupling
30	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
31	500	500		MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation
32	50	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	" "
33	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
34	4000	300		MC463	MW.5-24	1FM-24	1467-004	1D5D4	Fixed Padder
35	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	RF Filter

*Parallel sections to obtain 40-40 MFD. and mount in clip.
†Use with mounting clip.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
36A	2 Meg.	1	R47240	DTM296	D13-139XX		Volume Control
B	Shaft		Not Req.	SS1	A		Attach to 36A per instructions
37A	1 Meg.	1	R47235	MR53	D14-137		Tone Control
B	Shaft		Not Req.	Not Req.	A		Attach to 37A per instructions
C	Switch		" "	M26	41		" " " " "

CHASSIS—TOP VIEW



NOTE: VOLT. & RES. READINGS TAKEN IN STANDARD BROADCAST POSITION. PUSH BUTTONS IN "OUT" POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7E6	0V.	155V.DC	0V.	.9V.DC	0V.	-4.4V.DC	.9V.DC	6.5V.AC
2	7H7	6.5V.AC	195V.DC	100V.DC	.9V.DC	0V.	-4.8V.DC	.9V.DC	0V.
3	6SK7GT	0V.	6.5V.AC	2.35V.DC	0V.	2.35V.DC	95V.DC	0V.	237V.DC
4	6SQ7GT	0V.	*	0V.	-.35V.DC	-.3V.DC	150V.DC	0V.	6.5V.AC
5	6SQ7GT	0V.	-.35V.DC	0V.	0V.	0V.	93V.DC	6.5V.AC	0V.
6	6K6GT/G	0V.	0V.	230V.DC	237V.DC	-.2V.DC	0V.	6.5V.AC	17V.DC
7	6K6GT/G	0V.	0V.	227V.DC	237V.DC	-.2V.DC	197V.DC	6.5V.AC	17V.DC
8	5Y3G	0V.	320V.DC	0V.	315V.AC	0V.	315V.AC	0V.	320V.DC

* DO NOT MEASURE THIS POINT EXCEPT WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

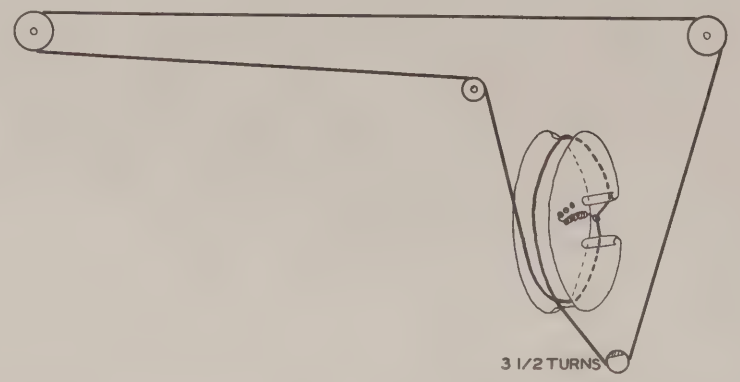
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7E6	0Ω	118 KΩ	20KΩ	50 Ω	0 Ω	1.1 MEG	50Ω	.1 Ω
2	7H7	.1 Ω	120K Ω	230KΩ	50 Ω	0 Ω	2MEG	50 Ω	0Ω
3	6SK7GT	0Ω	.1 Ω	255 Ω	1.2MEG	255 Ω	192 KΩ	0Ω	110 KΩ
4	6SQ7GT	0 Ω	*	0Ω	3 MEG	148KΩ	330 KΩ	0 Ω	.1 Ω
5	6SQ7GT	0 Ω	46 KΩ	0Ω	0 Ω	0 Ω	290KΩ	.1 Ω	0 Ω
6	6K6GT/G	0Ω	0 Ω	110 KΩ	110 KΩ	300 KΩ	INF	.1 Ω	270 Ω
7	6K6GT/G	0Ω	0 Ω	110 KΩ	110 KΩ	355 KΩ	120 KΩ	.1 Ω	270 Ω
8	5Y3G	0 Ω	110 KΩ	INF	150 Ω	INF	143 Ω	INF	110 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PUSH BUTTON ADJUSTMENTS

1. Turn on receiver and allow to warm up at least five minutes.
2. Remove knob from lever to be adjusted. (The knob slips straight off the lever).
3. Loosen (turn counter-clockwise) the screw on the push button lever two or three turns, using a small screwdriver.
4. Using the Station Selector Knob, accurately tune in the station to be set up.
5. Push the push button lever all the way in. If the station becomes detuned, retune it. Turning the tuning knob back and forth slightly, either side of the station while holding the lever in, will help obtain a precise setting. Tighten the screw in the lever while the lever is held pushed in and the station accurately tuned.
6. Replace the push button knob on its lever making sure the slot in the knob and the end of the lever are in line.
7. Follow the same proceedure for each of the remaining push buttons.



DIAL CORD DRIVE

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Osc. & Bias Con.	7E6	7E6	8W	
2	Converter	7H7	7H7	8V	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Phase Inverter	6SQ7GT	6SQ7GT	8Q	
6	Power Output	6K6GT/G	6K6GT/G	7S	
7	Power Output	6K6GT/G	6K6GT/G	7S	
8	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

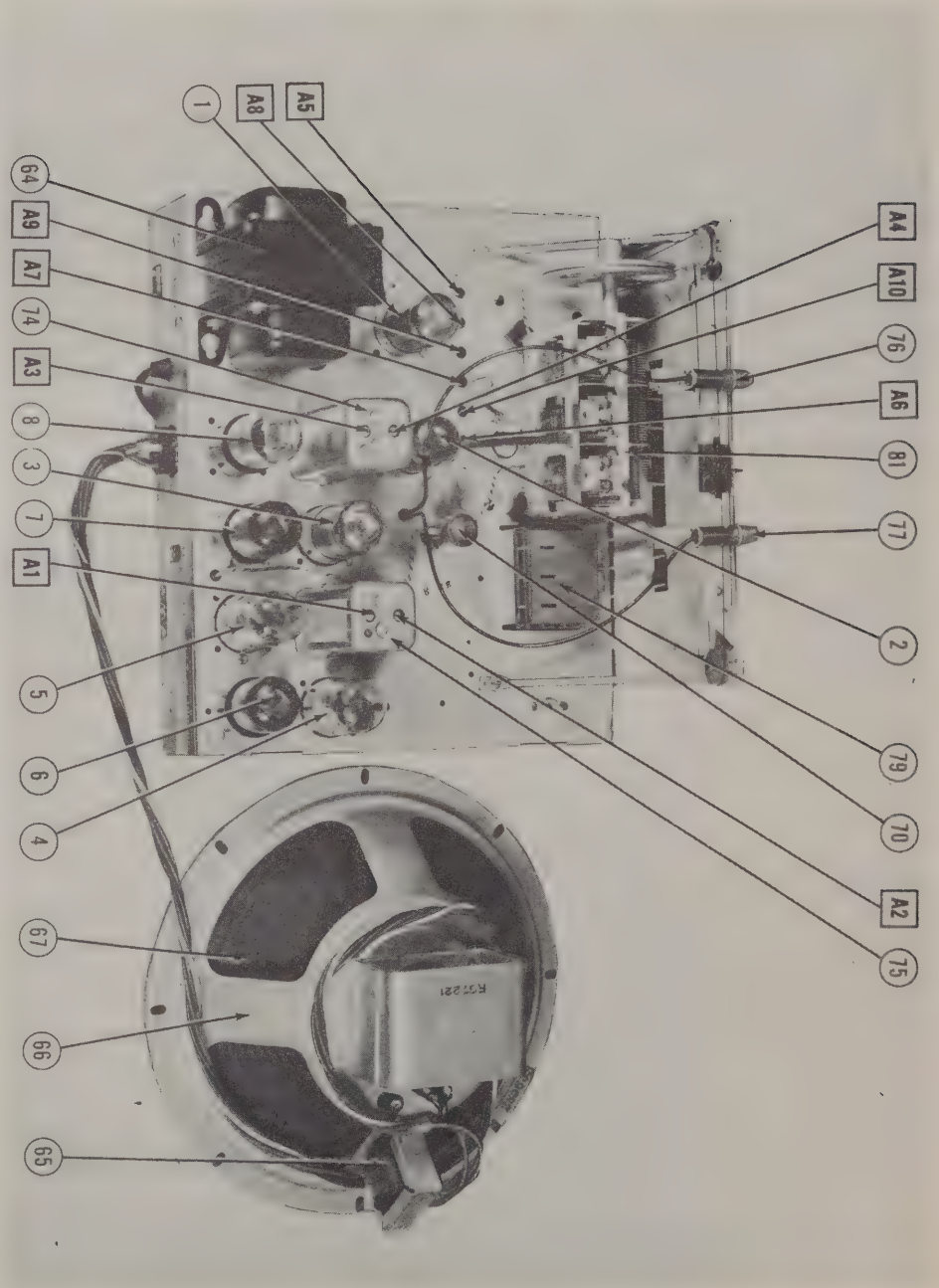
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9A	30	375	R45829	FP444*	DY-2x30-450†	EL-330†		BR3045	Filter - Yellow
B	30	275						BR3045	" - Red
10	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	6K6 Plate Bypass
11	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" " "
12	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
13	.005	400		TP407	S-6-005	TC-25	484-005	DT6D5	" "
14	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
16	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	Phono Shield Isolation
17	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
18	.008	400		TP450	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
19	.003	400		TP406	S-6-003	TC-23	484-003	DT6D3	" "
20	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
21	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Screen Bypass
22	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
23	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Cath. Bypass
24	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	7E6 Plate Decoupling
25	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Conv. Plate Bypass
26	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Conv. Screen Bypass
27	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
28	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	RF Coupling
29	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Diode Coupling
30	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
31	500	500		MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation
32	50	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	" "
33	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
34	4000	300		MC463	MW.5-24	1FM-24	1467-004	1D5D4	Fixed Padder
35	100	500		MC235	M0.5-31	1FM-31	1468-0001	5W5T1	RF Filter

*Parallel sections to obtain 40-40 MFD. and mount in clip.
†Use with mounting clip.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
36A	2 Meg.	1	R47240	DTM296	D13-139XX		Volume Control
B	Shaft		Not Req.	SS1	A		Attach to 36A per instructions
37A	1 Meg.	1	R47235	MR53	D14-137		Tone Control
B	Shaft		Not Req.	Not Req.	A		Attach to 37A per instructions
C	Switch		" "	M26	41		" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
38	1000Ω	1/3		BTS-1000	Br.-Blk.-Red RF Blocking
39	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. Bias Diode Load
40	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
41	47Ω	1/3		BW-½-47	Yl.-Vi.-Blk. Osc. Cathode
42	100Ω	1/3		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
43	22KΩ	1/3		BTS-22K	Red-Red-Or. Osc. Grid
44	120KΩ	1/3		BTS-120K	Br.-Red-Yl. Converter Screen Dropping
45	8200Ω	1		BTA-8200	Gray-Red-Red Osc. Plate Dropping
46	100Ω	1/3		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
47	10KΩ	1/3		BTS-10K	Br.-Blk.-Or. Converter Plate Filter
48	82KΩ	1/3		BTS-82K	Gray-Red-Or. IF Screen Dropping
49	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
50	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
51	220KΩ	1/3		BTS-220K	Red-Red-Yl. 1st AF Plate Load
52	4.7 Meg.	1/3		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
53	270Ω	1/3		BW-½-270	Red-Vi.-Br. IF Cathode
54	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
55	560KΩ	1/3		BTS-560K	Grn.-Blue-Yl. Tone Compensation
56	27KΩ	1/3		BTS-27K	Red-Vi.-Or. Tone Compensation
57	220K	1/3		BTS-220K	Red-Red-Yl. Tone Compensation
58	56KΩ	1/3		BTS-56K	Grn.-Blue-Or. Tone Compensation
59	180KΩ	1/3		BTS-180K	Br.-Gray-Yl. Inverter Plate Load
60	47KΩ	1/3		BTS-47K	Yl.-Vi.-Or. Inverter Grid
61	330KΩ	1/3		BTS-330K	Or.-Or.-Yl. Output Grid
62	270KΩ	1/3		BTS-270K	Red-Vi.-Yl. Output Grid
63	270Ω	2		BW-2-270	Red-Vi.-Br. Output Cathodes

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	THORDASON PART No.	INSTALLATION NOTES
64A	117VAC	630VCT @ .630A	5.3VAC @ .080A	6.5VAC @ 1.8A	R45953	P-6312§	T-22R04§	60 Cycle Oper.
64B				@ 2.7A	R45954			25 Cycle Oper.

§Use universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
65	14800Ω	3.8Ω	600Ω	.35Ω	R45837	A-3823	T-22S48		

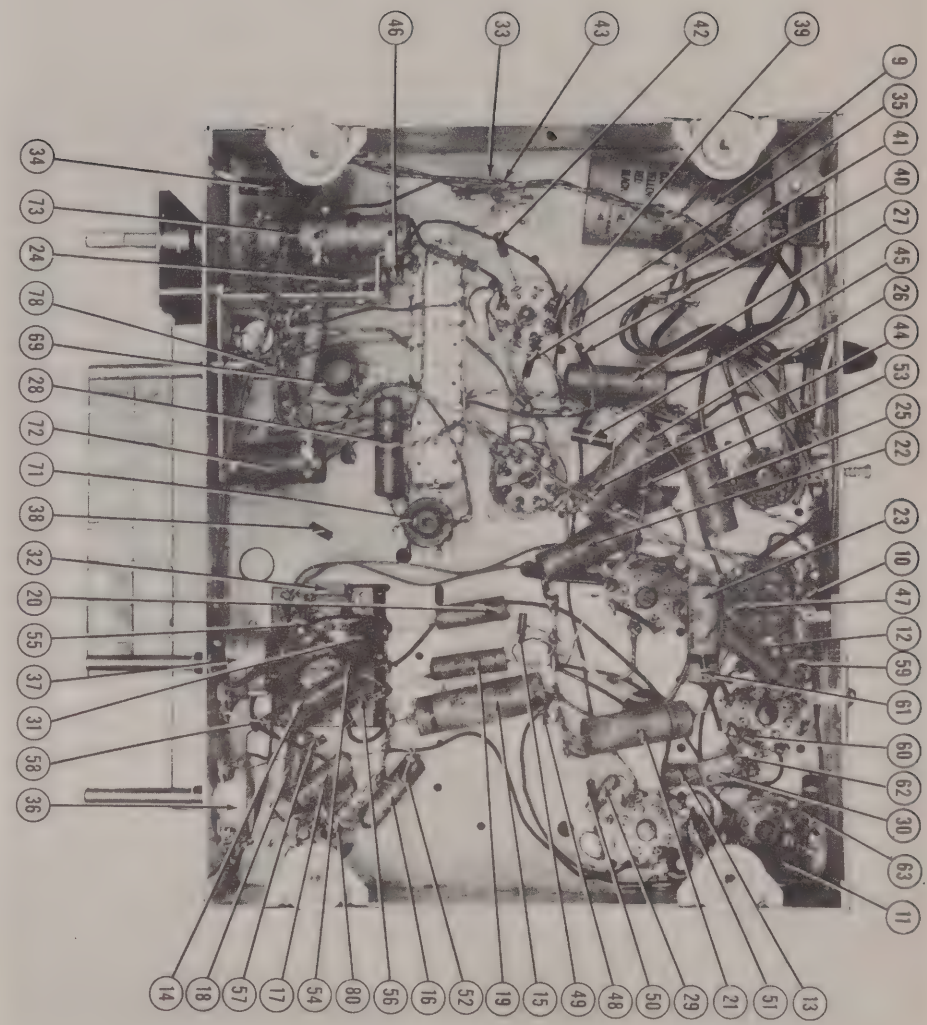
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	SILVERTONE PART No.	JENSEN PART No.		
66	850Ω	3.8Ω	R57221	ST-441‡ Mod. G10-RS		‡Add 2500Ω 5W Resistor in Parallel with Field Coil
	CONE DIA.	VC DIA.				
67	9½"	1"	R45836			Field Coil Original Part No. R45838

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
68	Loop Ant.	0Ω	.1Ω			
69	SW Ant.Coil	.3Ω	.1Ω	R47195	14-1044	
70	LoopLoadCoil	2Ω		R47193		
71	CouplingCoil	0Ω		R57187		Preselector
72	Det. Coil		2.2Ω	R47194		
73A	BC Osc.Coil		5.2Ω	R47192		Items 73A, 73B wound on same form
73B	SW " "		0Ω	R47192		
74	Input IF	14Ω	14Ω	R45305	16-6658	
75	Output IF	16Ω		R45306	16-6670★	★Add 150KΩ resistor from low end secondary to ground.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

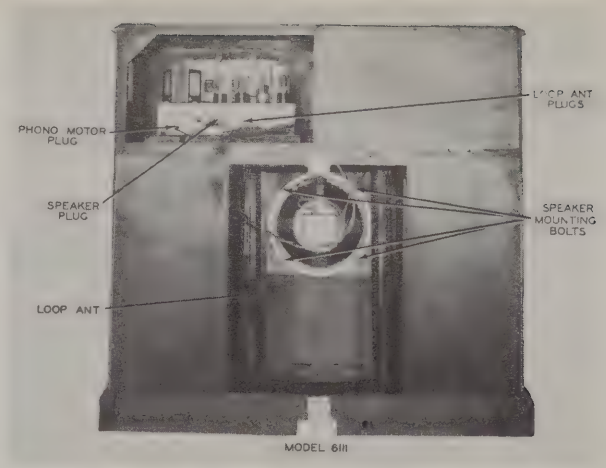
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SILVERTONE PART No.		INSTALLATION NOTES
76	Bayonet	6-8	0.25	Blue	14914		Type 44
77	"	6-8	0.25	"	14914		" "

MISCELLANEOUS

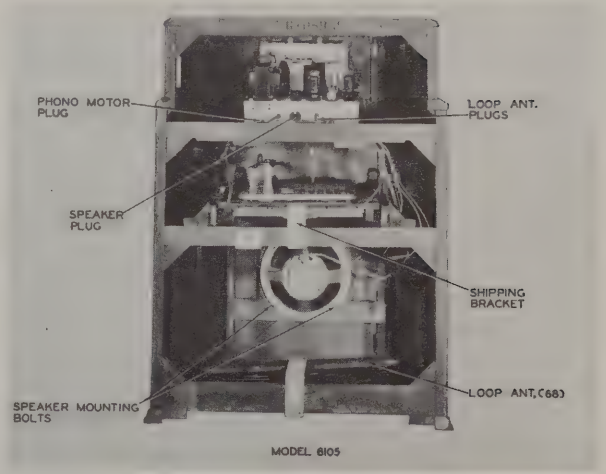
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
78	Wave Switch	R47191	
79	Switch	R45844	Tone-Phono-Tel-Freq. Mod.
80	Bias Cell	R17915	
81	Tuner	R47259	P.B. with Var. Capacitor
	Trimmer Assby.	R47199	6 Gang A5, A6, A7, A8, A9, A10
	Push Buttons	R57205	Tone,-Phono-Tel.-Freq. Mod.
	" "	R57204	Push Stations
	Dial	R57206	Station (Model 6105)
	"	R57233	" (Model 6111)
	Escutcheon	R57271	Dial (Model 6105)
	"	R57251	" (Model 6111)
	Knob	R49940	On-Off & Tone
	"	R49939	Tuning
	"	R49941	Volume
	"	R49943	Wave Switch

DISASSEMBLY INSTRUCTIONS

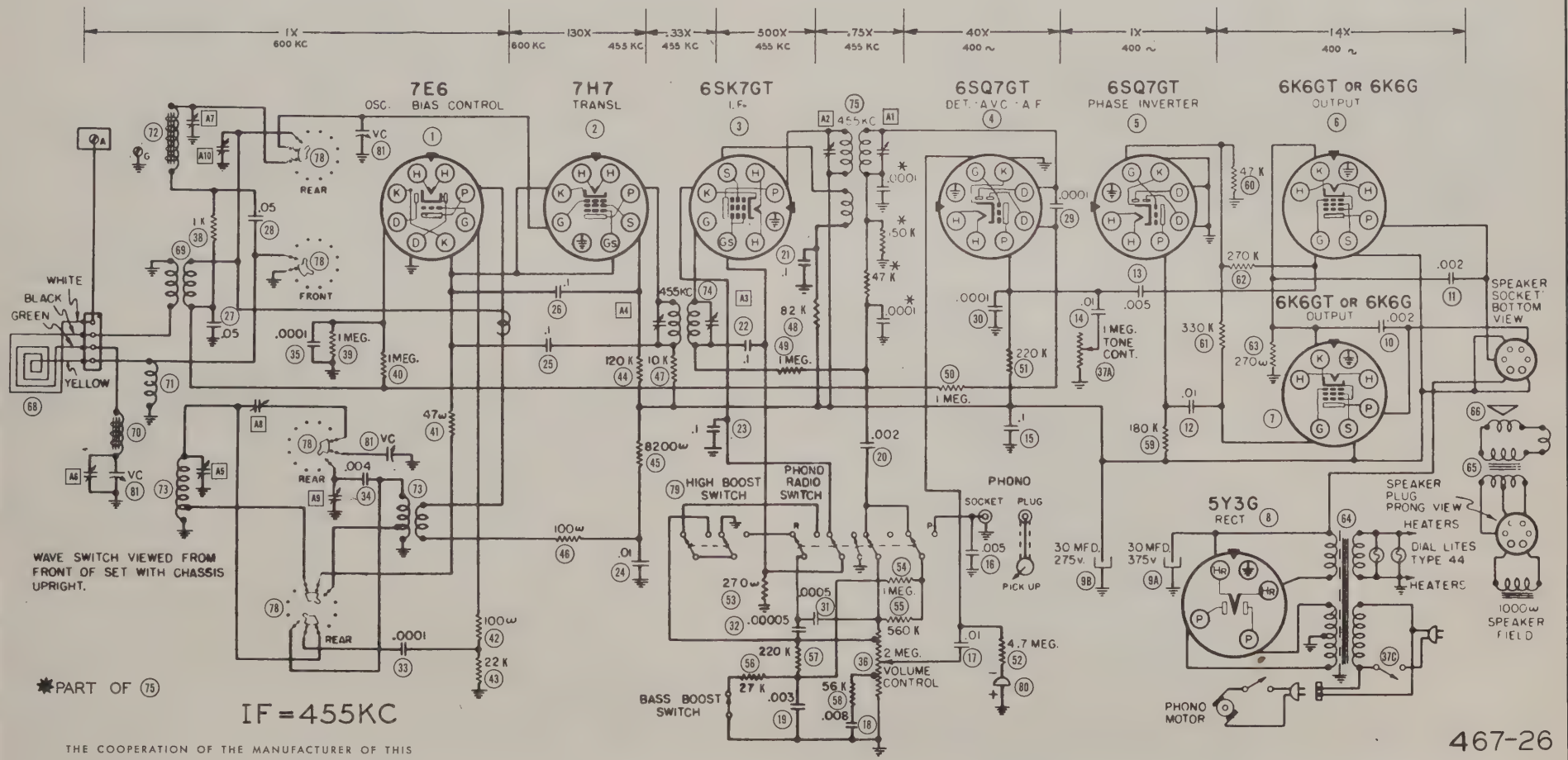
1. Remove the four push-on type knobs and felt washers from the front panel.
2. Remove set screw from speaker plug.
3. Disconnect speaker plug from back of chassis.
4. Disconnect phono-motor plug from back of chassis.
5. Disconnect the four colored antenna loop plugs from jacks on back of chassis.
6. Disconnect the phono-pickup plug from chassis.
7. Remove four bolts and square washers holding chassis to chassis board. Remove chassis.
8. Remove top antenna loop bracket from back of cabinet. Remove antenna loop.
9. Remove four nuts from speaker bolts. Remove speaker from cabinet.



MODEL 6111

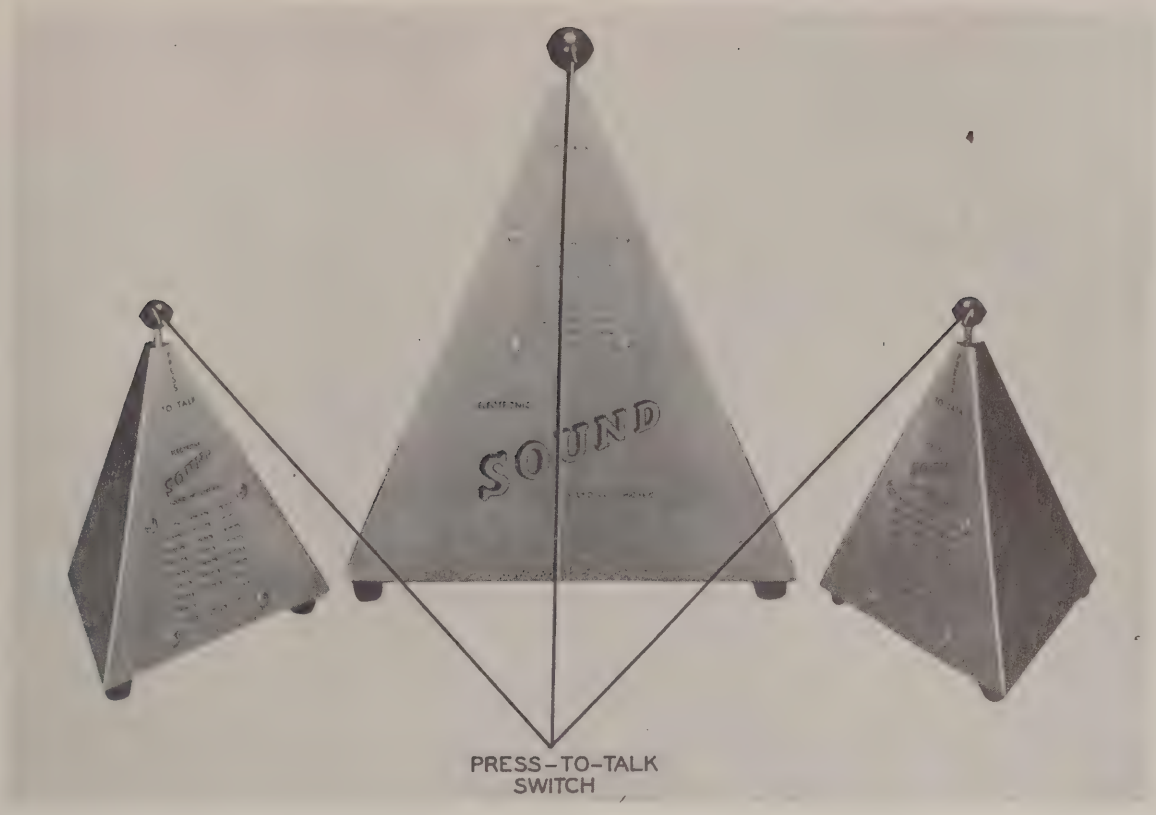


MODEL 6105



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

SOUND INC.
"INTER SOUND"



SOUND INC.
"INTER SOUND"

SOUND INC. "INTER SOUND"

TRADE NAME	Sound, Inc., "Inter Sound"
MANUFACTURER	Sound, Inc., 221 East Cullerton St., Chicago 16, Ill.
TYPE SET	3 Tube Intercommunication System
TUBES (THREE)	Types, 12SL7GT Audio Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	117 Volts AC-DC
RATING	.230 Amps. @ 117VAC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SL7GT	0V.	72V.DC	1.05V.DC	0V.	72V.DC	1.05V.DC	12.5V.AC	0V.
2	50L6GT	0V.	60V.AC	116V.DC	122V.DC	0V.	0V.	12.5V.AC	8.6V.DC
3	35Z5GT	125V.DC	93V.AC	87 V.AC	122V.DC	117V.AC	0V.	60V.AC	125V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SL7GT	178Ω	120 KΩ	18Ω	43KΩ	120 KΩ	18Ω	12Ω	0Ω
2	50L6GT	INF.	51Ω	70KΩ	70KΩ	41KΩ	0Ω	12Ω	150Ω
3	35Z5GT	70KΩ	80Ω	74Ω	70KΩ	220Ω	0Ω	51Ω	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SOUND INC. PART No.	STANDARD REPLACEMENT		
1	Audio Amp.	12SL7GT	12SL7GT	8BD	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SOUND INC. PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
4A	20	150		2N509	DHN-2x20-150	TA-220	PRSA150-20-20	EZ2215	Filter
B	20	150							"
5A	20	150		2N509	DHN-2x20-150	TA-220	PRSA150-20-20	EZ2215	"
B	20	150							Cath. Bypass
6	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolation
7	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	50L6 Plate Bypass
8	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
9	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
10	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Grid Bypass
11	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	" "

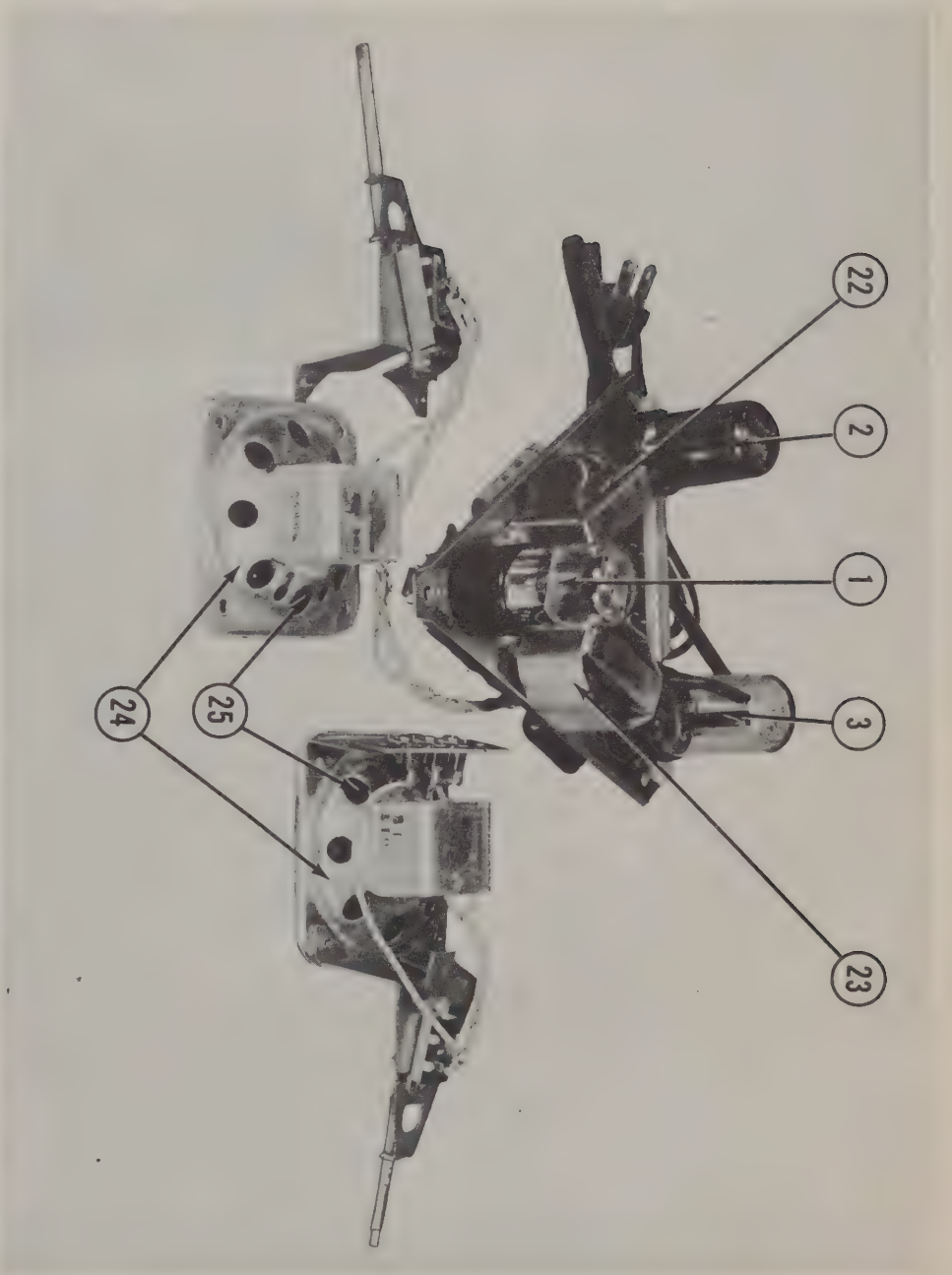
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SOUND INC. PART No.	IRC PART No.	
12	5KΩ	½		BTS-4700	Grn.-Blk.-Red 1st AF Grid
13	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 1st AF Plate Load
14	18Ω	½		BW-½-18	Br.-Gray-Blk. AF Cathode
15	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 2nd AF Grid
16	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 2nd AF Plate Load
17	50KΩ	½		BTS-47K	Grn.-Blk.-Or. Output Grid
18	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
19	50KΩ	½		BTS-47K	Grn.-Blk.-Or. Filter
20	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter
21	150Ω	10		AB-150	Line Dropping

TRANSFORMER (MICROPHONE)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SOUND INC. PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
22	3.6Ω	2500Ω	.65Ω	210Ω	T-4103	A-3876	T-22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

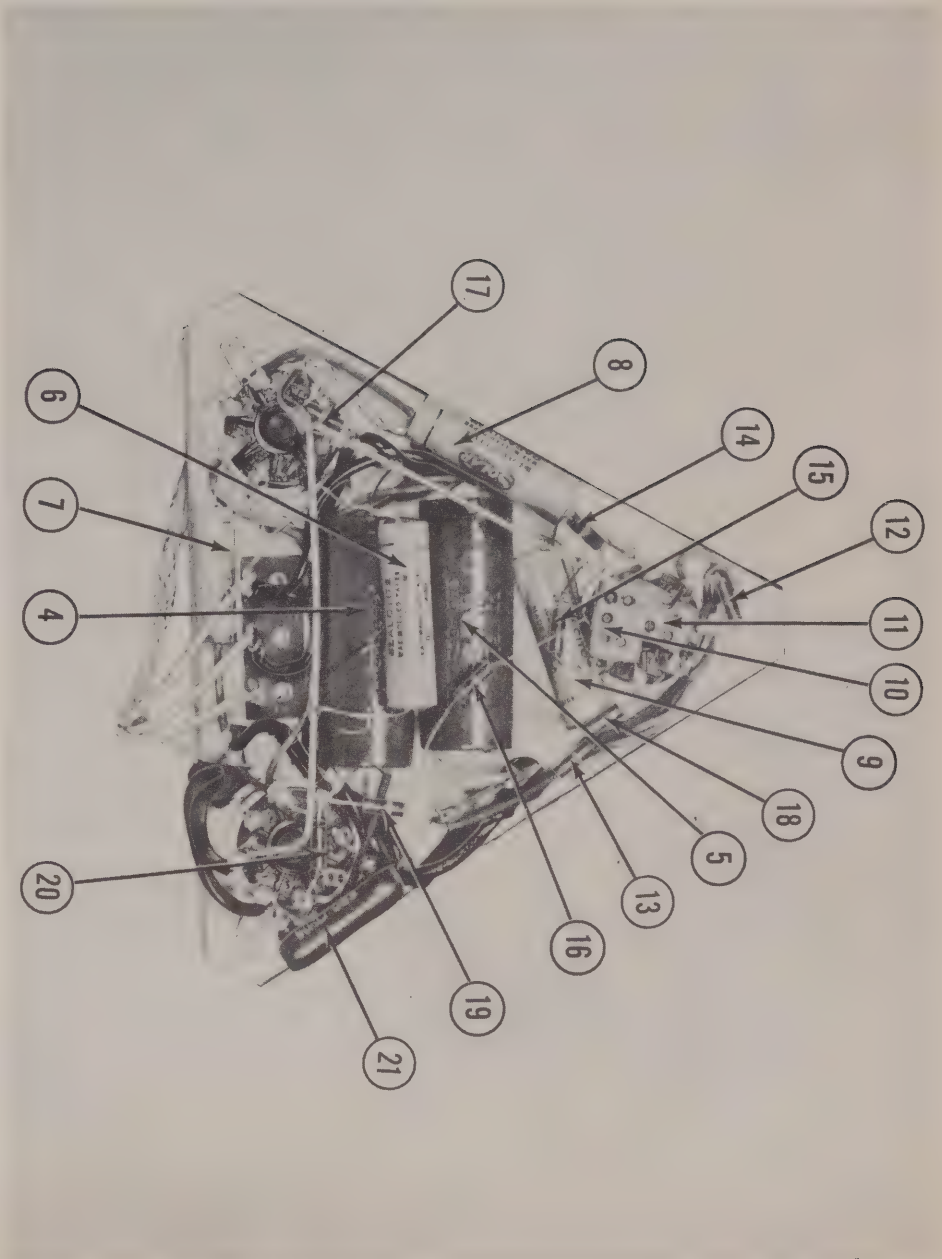
TRANSFORMER (OUTPUT)

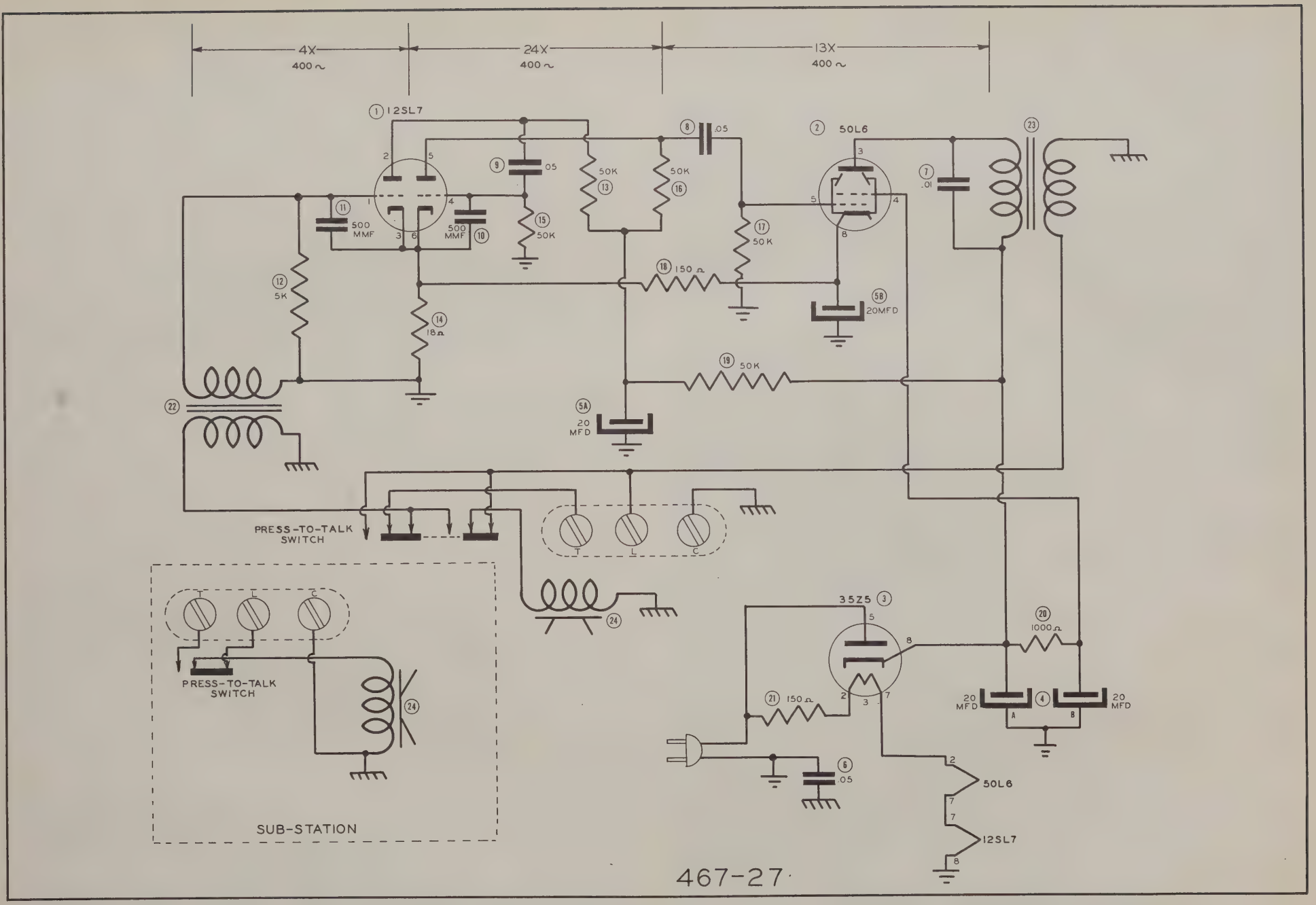
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SOUND INC. PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
23	2500Ω	3.6Ω	210Ω	.85Ω	T-4103	A-3876	T-22845		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SOUND INC. PART No.	JENSEN PART No.		
24	FIELD PM	VC IMP. 3.6Ω	30E080X20	ST-113 Mod. P4-X		
25	CONE DIA. 3"	VC DIA. ½"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		

CHASSIS—BOTTOM VIEW




4X
400 ~
24X
400 ~
13X
400 ~
1 12SL7
2 50L6
3 35Z5
4 20 MFD A B 20 MFD
5A 20 MFD
6 .05
7 .01
8 .05
9 .05
10 500 MMF
11 500 MMF
12 5K
13 50K
14 18Ω
15 50K
16 50K
17 50K
18 150Ω
19 50K
20 1000Ω
21 150Ω
22
23
24
58 20MFD
PRESS-TO-TALK SWITCH
T L C
PRESS-TO-TALK SWITCH
T L C
SUB-STATION
50L6
12SL7

467-27

TRUETONE
MODEL D4630

TRUETONE
MODEL D4630

TRUETONE MODEL D4630

TRADE NAME	Truetone Model D4630 (Factory Model 26C19-61)
MANUFACTURER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Superheterodyne Dual Unit Automotive Set
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 1st Det.-Osc., 6SK7 IF Amp., 6SQ7 2nd Det.-1st AF, 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC RATING 7.1 Amps. @ 6.3V DC

ALIGNMENT INSTRUCTIONS

To calibrate tune in station of known freq., loosen knurled nut at the tuning control clamp fitting and turn the flexible shaft with the fingers until the dial pointer indicates the frequency of the station being received. Tighten knurled nut. During alignment, set volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to pin 8 of 6SA7. Low side to chassis.	455KC	Tuning mechanism fully counter-clockwise. (Slugs out of coils)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
60 MMF.	High side to ant. Low side to chassis.	1600KC	"	"	A5	The total capacity of the antenna cable and dummy antenna should be 60 MMF. Connect capacitor at signal generator end. Adjust for maximum output.
60 MMF.	"	1400KC	Tune to maximum output.	"	A6,A7.	"
			Tune in weak signal near 1400KC.	"	A7	Reinstall in car and connect car antenna. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	8N	
2	1st Det.-Osc.	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	2nd Det.-1st AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	40	350	45X296	FP306*	DY-2x30-350/	EL-323*		EZ1A1350	Filter - Red
B	20	350			50-50*			BR4035†	" - Green
C	20	25							Cath. Bypass - Yellow
8	.0055	1000	R54552	OT371	XTIMS-10-006	PX361	1084-0055	MD12D6	Buffer
9	.5	180	46X297	RF480				HC1900B	Hash Filter
10	.04	600	F56403	TP414	S-6-04	TC-14	684-04	DT6S4	" "
11	.01	600	F56103	TP410	S-6-01	TC-11	684-01	DT6S1	6K6 Plate Bypass
12	.01	400	D56103	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
13	.01	200	B56103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
14	.02	400	D56203	TP423	S-4-02	TC-12	484-02	DT4S2	IF Screen Bypass
15	.05	200	B56503	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.1	400	D56104	TP428	S-4-1	TC-1	484-1	DT4P1	6SA7 Screen Bypass
17	.001	400	D56102	TP404	S-6-001	TC-21	484-001	DT6D1	RF Coupling
18	100	500	47X476	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
19A	50	500	47X112	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Diode Filter
B	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" "
20	47	500	47X463	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
21	100	500	47X476	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
22	200	500	47X129	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Hash Filter

*Use mounting clip and insulating tube
†Parallel 15 - 10 MFD. sections for desired capacity

CONTROLS

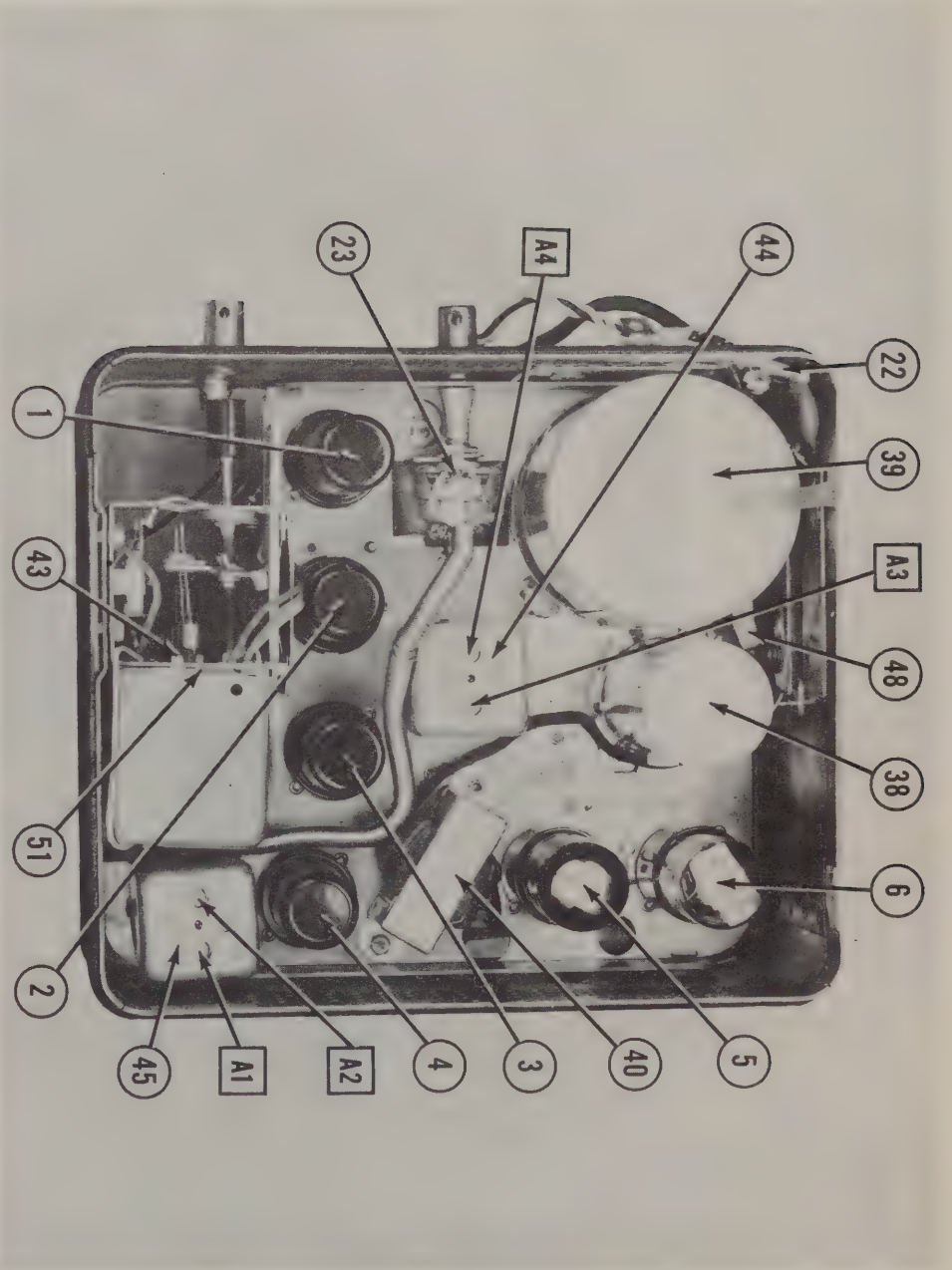
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
23A	500K	1	36X296	UM154	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	SS12§§	B	KSS-3§§	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

§§File out slot in shaft and use original guide funnel.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
24	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. RF Grid
25	15KΩ	1	C85153	BTA-15K	Br.-Grn.-Or. RF Plate Load
26	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Converter Grid
27	15KΩ	2	D84153	BT-2-15K	Br.-Grn.-Or. Converter Screen Dropping
28	22KΩ	½	B84223	BTS-22K	Red-Red-Or. Osc. Grid
29	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
30	82KΩ	½	B84223	BTS-82K	Gray-Red-Or. IF Screen Dropping
31	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. IF Filter
32	4.7 Meg.	½	B85475	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
33	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
34	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	560Ω	1	C84561	BW-1-560	Grn.-Blue-Br. Output Cathode
36	1500Ω	1	C85152	BTA-1500	Br.-Grn.-Red Filter
37	27Ω	½	B84270	BW-½-27	Red-Vi.-Blk. Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
38	Int.	6.3	150~	19A37		5307	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	THORDASON PART No.	INSTALLATION NOTES
39	5.5VDC @ 3.4A	500VCT @ .052A			53X232	P-4061‡		‡Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
40	11000Ω	3.3Ω	550Ω	.5Ω	51X89	A-3631	T-22547		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TRUETONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-568		
41A	4.3Ω	3.3Ω	12A386	Mod. E6-RS		
41B			12A384			Alternate Speaker
	CONE DIA.	VC DIA.				
42	6"	3/4"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	MEISSNER PART No.	INSTALLATION NOTES
43A	Ant. Coil		7Ω			Items 43A,B,C, may be obtained as complete unit under Part No. 26A368
B	RF Coil		7.2Ω			
C	Osc. Coil	1.3Ω	7.5Ω			
44	Input IF	22Ω	22Ω	9A1368	16-6658	
45	Output IF	23Ω	21Ω	9A1359	16-6660	
46	Vib. RF Ch.	0Ω		9A911		
47	B+ RF Ch.	23Ω		9A1115		
48	Field RF Ch.	0Ω		9A1369		
49	A+ RF Choke	0Ω		9A1194		

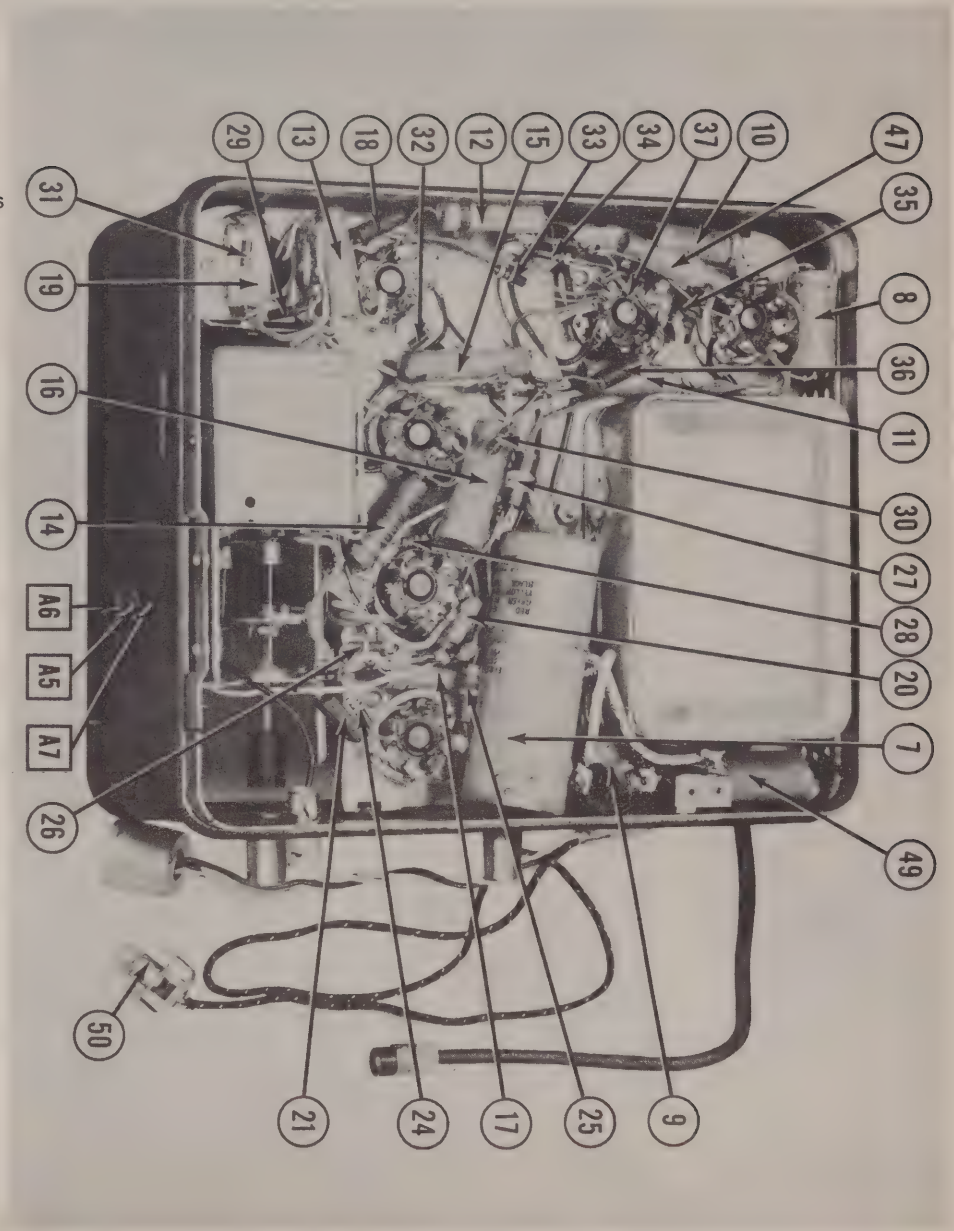
DIAL LIGHT

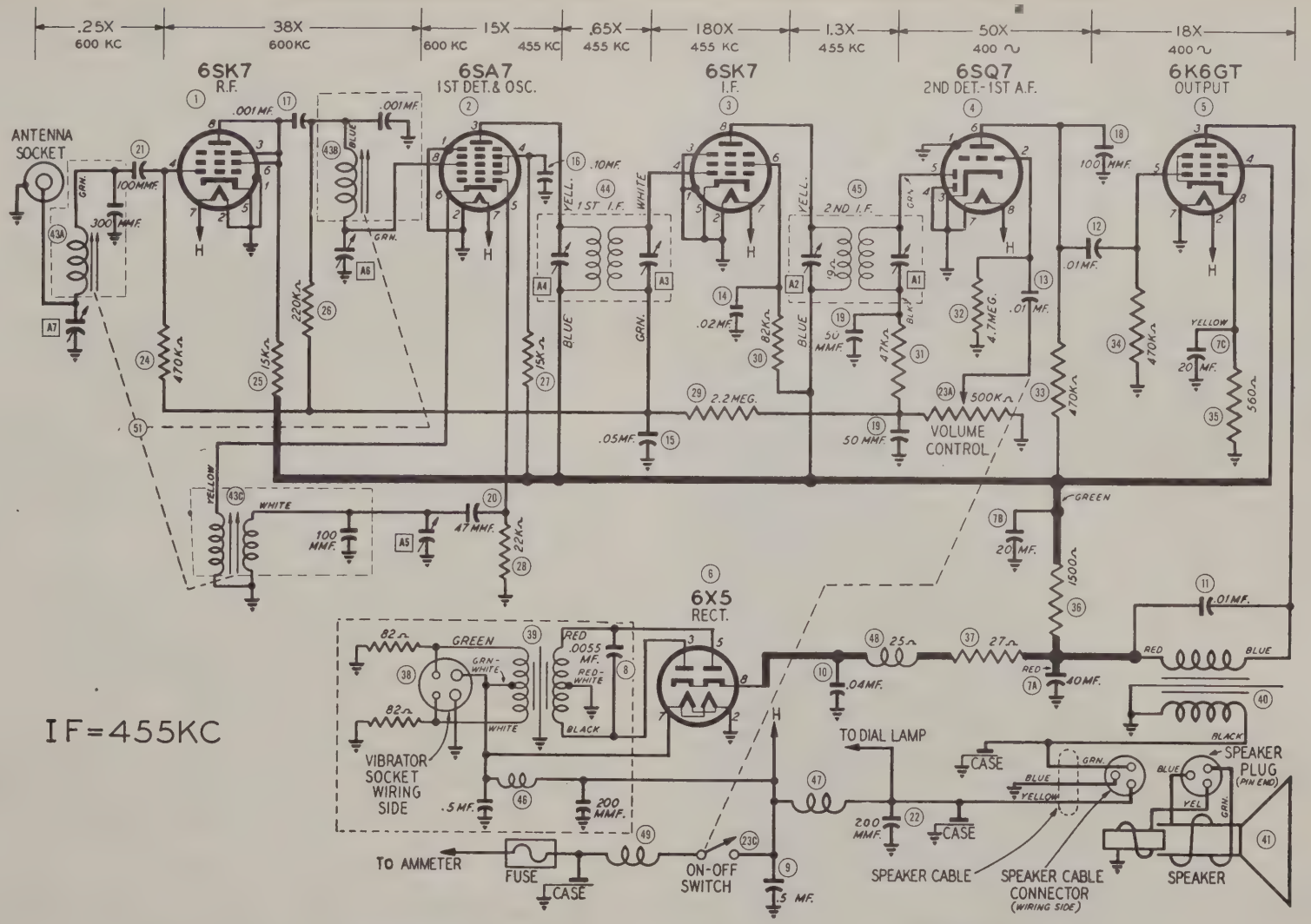
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TRUETONE PART No.		INSTALLATION NOTES
50	Bayonet	6-8	0.2	White			Type 51

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
51	Tuner Assby.	26A368	Complete Assby.
	Trimmer Assby.	17A159	A5, A6, A7
	Control Unit	20A92	Tuning
	Flexible Cable	18A53	Tuning & Volume 27"
	" "	18A54	" " 20"
	" "	18A55	" " 36"
	Battery Cable	13X390	Complete with Fuse Receptacle
	Socket	7A162	Dial Light
	Speaker Cable	13X424	Complete with Socket.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	62 V.DC	−.6 V.DC	0V.	62 V.DC	5.6 V.DC	62 V.DC
2	6SA7	0V.	0V.	188 V.DC	82 V.DC	−5.4 V.DC	0V.	5.6 V.DC	−.3 V.DC
3	6SK7	0V.	0V.	0V.	−.45 V.DC	0V.	55 V.DC	5.6 V.DC	188 V.DC
4	6SQ7	0V.	−.4 V.DC	0V.	0V.	−2 V.DC	69 V.DC	0V.	5.6 V.DC
5	6K6GT	230 V.DC	5.6 V.DC	215 V.DC	188 V.DC	0V.	0V.	0V.	14 V.DC
6	6X5GT	0V.	0V.	235 V.AC	0V.	235 V.AC	0V.	5.4 V.DC	232 V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

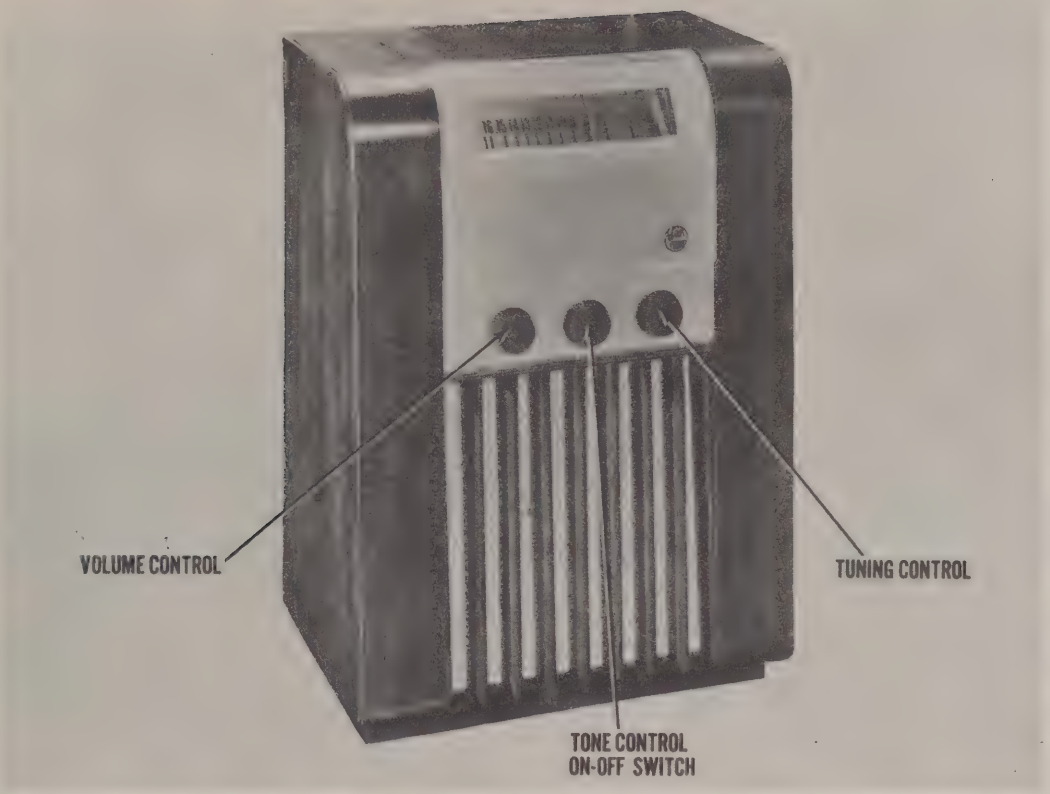
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	50KΩ	3.5MEG	0Ω	50KΩ	.3Ω	50KΩ
2	6SA7	0Ω	0Ω	35KΩ	50KΩ	22KΩ	1Ω	.3Ω	3.2MEG
3	6SK7	0Ω	0Ω	0Ω	3 MEG	0Ω	115KΩ	.3Ω	35KΩ
4	6SQ7	0Ω	4 MEG	0Ω	0Ω	550KΩ	490KΩ	0Ω	.3Ω
5	6K6GT	35KΩ	.3Ω	35KΩ	35KΩ	400KΩ	INF.	0Ω	520Ω
6	6X5GT	0Ω	0Ω	147Ω	INF.	167Ω	INF.	.3Ω	35KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

467-28

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



VAN CAMP
MODEL 567-1-6A

VAN CAMP
MODEL 567-1-6A

VAN CAMP MODEL 576-1-6A

TRADE NAME	Van Camp Model 576-1-6A
SUPPLIER	Van Camp Hardware & Iron Co., 401 W. Maryland St., Indianapolis, Ind.
TYPE SET	AC - DC Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .285 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Set volume control at maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 of 12SA7. Low side to B-.	455KC	High freq.end of dial.(Variable fully open)	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
	Loop	1620KC	"	"	A5	Connect output of signal generator to two turns of wire and radiate signal into receiver loop. Adjust for maximum output.
	"	1400KC	Tune for maximum output.	"	A6,A7.	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: VAN CAMP PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: VAN CAMP PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A-8948	FP306*	DY-40+20-150	EL-24	AF84D20A*	UP4215	■ Filter
B	20	150							▲ "
8	.05	400	BC31B503	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.002	600	BD610202	TP405	S-6-002	TC-22	684-002	DT6D2	35L6 Plate Bypass
10	.005	600	BD610502	TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
11	.02	400	BD410203	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
12	.01	400	BD410103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
13	.03	200	BD210303	TP424	S-6-03	TC-13	484-03	DT4S3	Tone Compensation
14	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
15	.1	400	BD410104	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
16	.05	200	BD210503	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	220	500	BM78A221	MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Audio Plate Bypass
18	100	500	BM78A101	MC235	M0.5-31	1FM-31	1468-0001	5W5T1	Tone Compensation
19	47	500	BM78A470	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
20	150	500	BM78A151	MC236	M0.5-315	1FM-315	1468-00015	5W5T15	RF Pri. Shunt

*Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VAN CAMP PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	B-51725-2	TM233	D18-133X	AT-68	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 21A per instructions
22A	500KΩ	1	B-51724-1	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

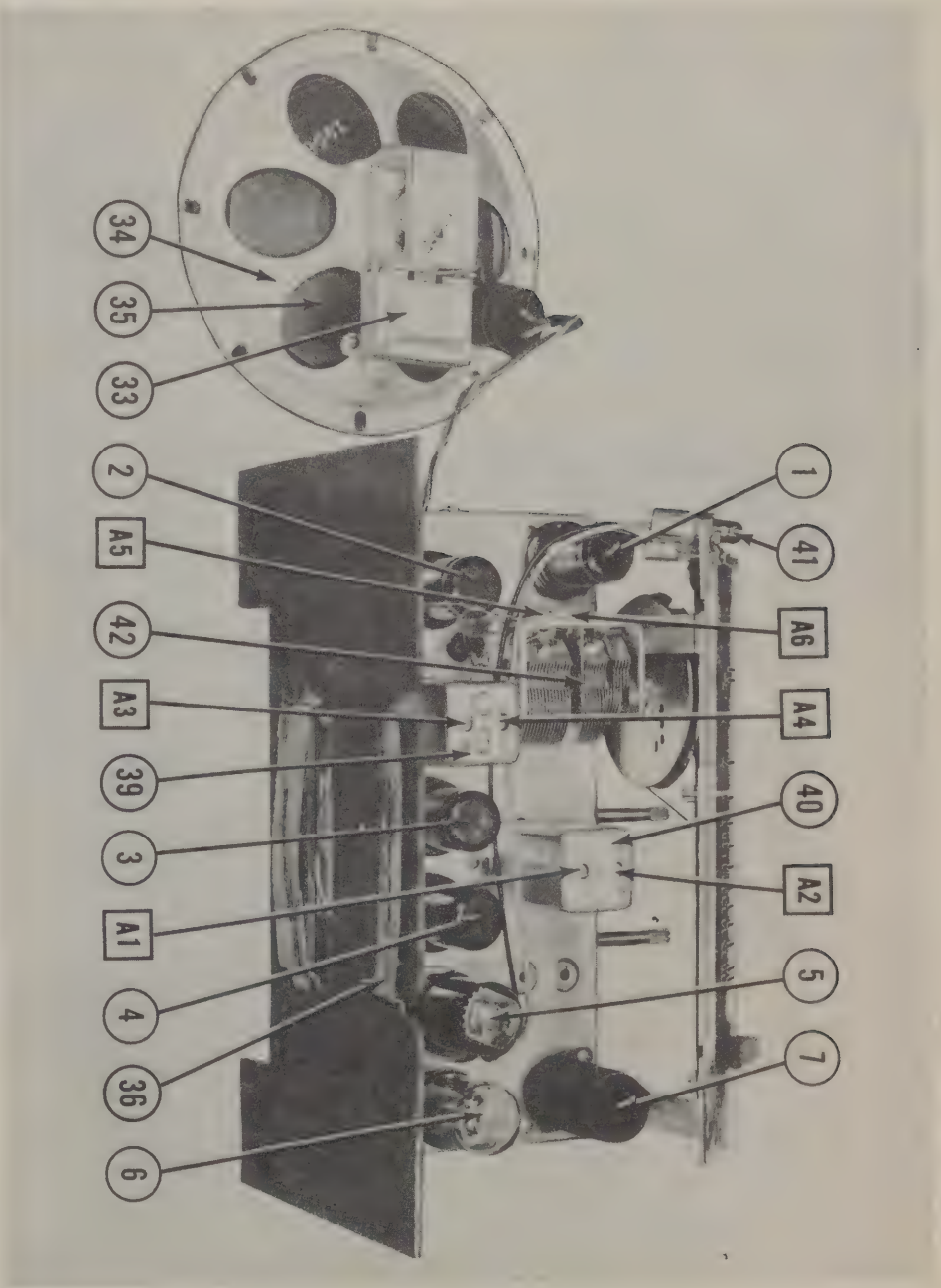
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VAN CAMP PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	1/3	BR17B223	BTS-22K	Red-Red-Or. Osc. Grid
24	15 Meg.	1/3	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
25	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. Line Isolating
26	15KΩ	1/3	BR17B153	BTS-15K	Br.-Grn.-Or. Tone Compensation
27	3.3 Meg.	1/3	BR17B335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	6.8 Meg.	1/3	BR17B685	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
29	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	100KΩ	1/3	BR17B104	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
31	150Ω	1/2	BR16C151	BW-½-150	Br.-Grn.-Br. Output Cathode

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000∿)	REPLACEMENT DATA: VAN CAMP PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
32	78MA	100Ω	4.5 Henries	B-51726-1	C-1355		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		VAN CAMP	STANCOR	THORDAR'N		
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.		
33	1900Ω	3.1Ω	240Ω	.65Ω		A-3876†	T-22846†		†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			VAN CAMP PART No.	JENSEN PART No.		
34	FIELD	VC IMP.	C-51722	ST-110		
	P.M.	3.1Ω		Mod. P6-V		
35	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	6"	1/2"				

R F COILS

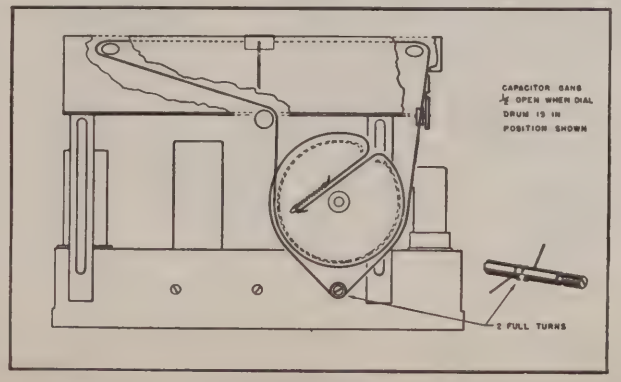
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	VAN CAMP PART No.	MEISSNER PART No.	
36	Loop Ant.		1Ω			
37	RF Coil	34Ω	13Ω	B51257	14-1027	
38	Osc. Coil	1Ω	9.3Ω	B51256		
39	Input IF	29Ω	22Ω	B51010-1	16-6658	
40	Output IF	34Ω		B51011-1	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					VAN CAMP PART No.		
41	Bayonet	6-8	.15	Brown	A-6158		Type 47

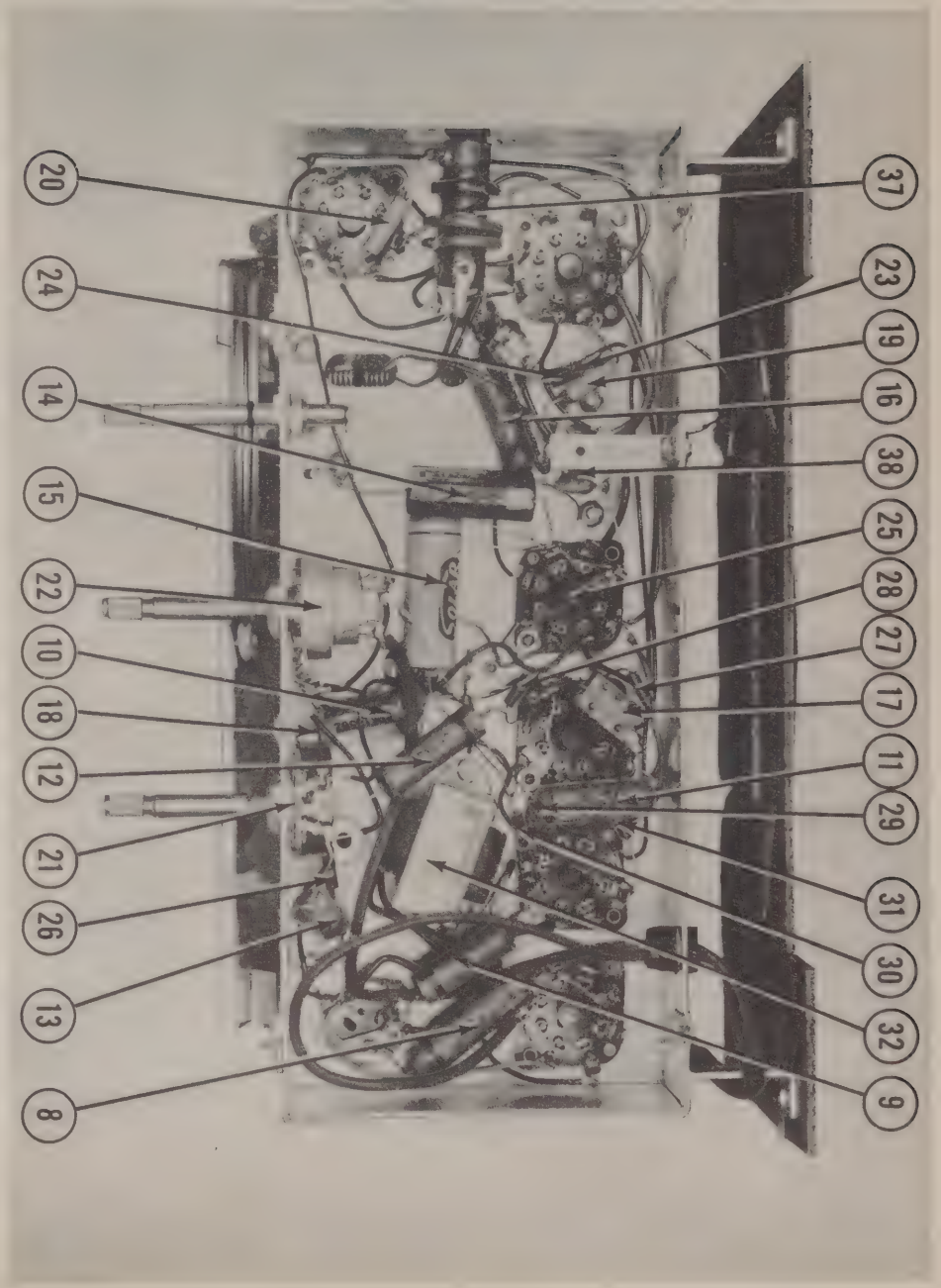
MISCELLANEOUS

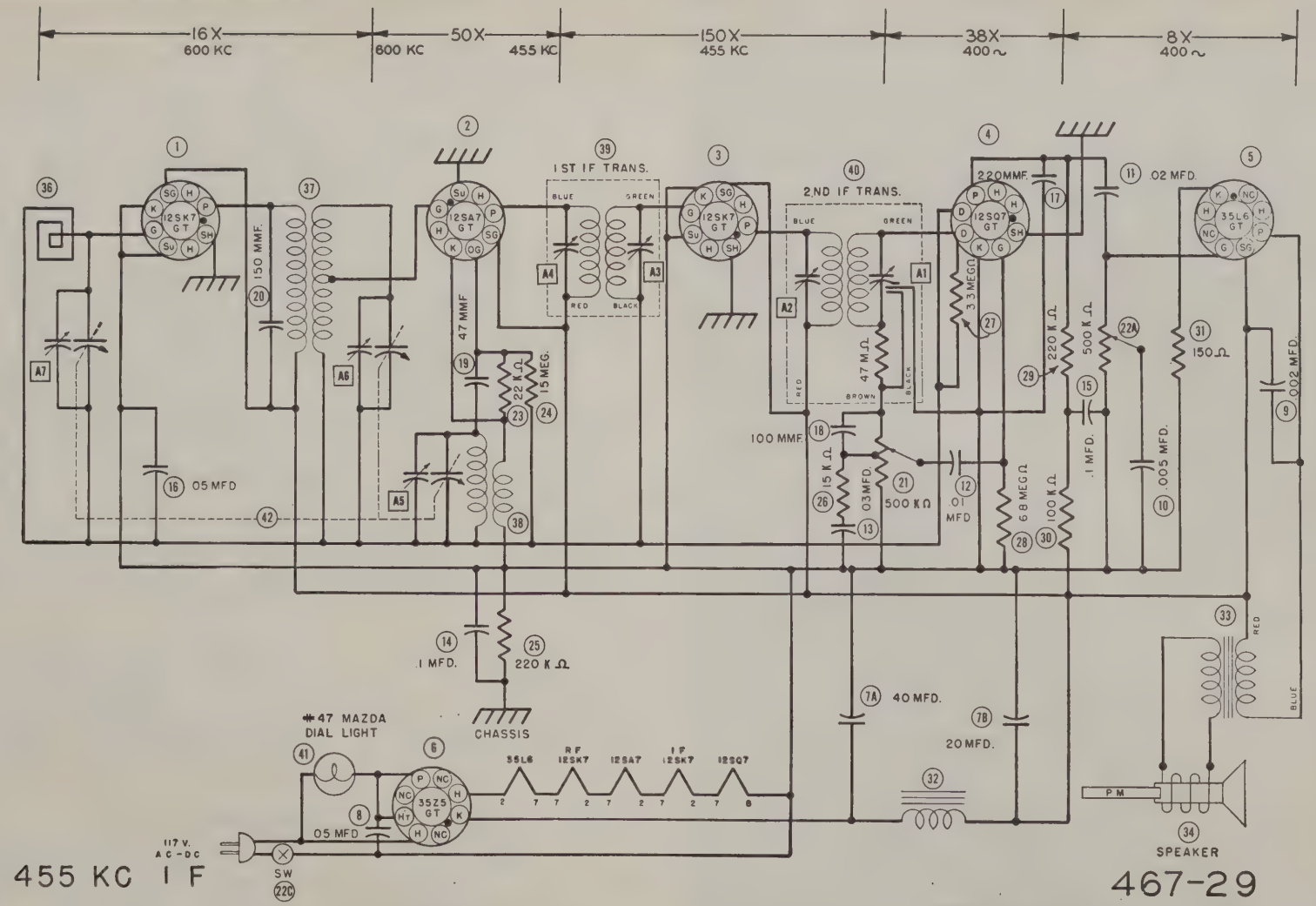
ITEM No.	PART NAME	VAN CAMP PART No.	NOTES
42	Tuning Cap.	C-51251	3 Gang Variable Cap.



Dial Mechanism

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	46.5V.AC	0V.	-7V.DC	0V.	100V.DC	35.5V.AC	100V.DC
2	12SA7GT	0V.	35.5V.AC	100V.DC	100V.DC	-1.45V DC	0V.	24V.AC	-7V.DC
3	12SK7GT	0V.	24V.AC	0V.	-7V.DC	0V.	100V.DC	12.5V.AC	100V.DC
4	12SQ7GT	0V.	-55V.DC	0V.	-3V.DC	-7V.DC	53V.DC	12.5V.AC	0V.
5	35L6GT	0V.	87V.AC	92V.DC	100V.DC	0V.	53V.DC	46.5V.AC	6.2V.DC
6	35Z5GT	0V.	117V.AC	112V.AC	0V.	112V.AC	0V.	87V.AC	110V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

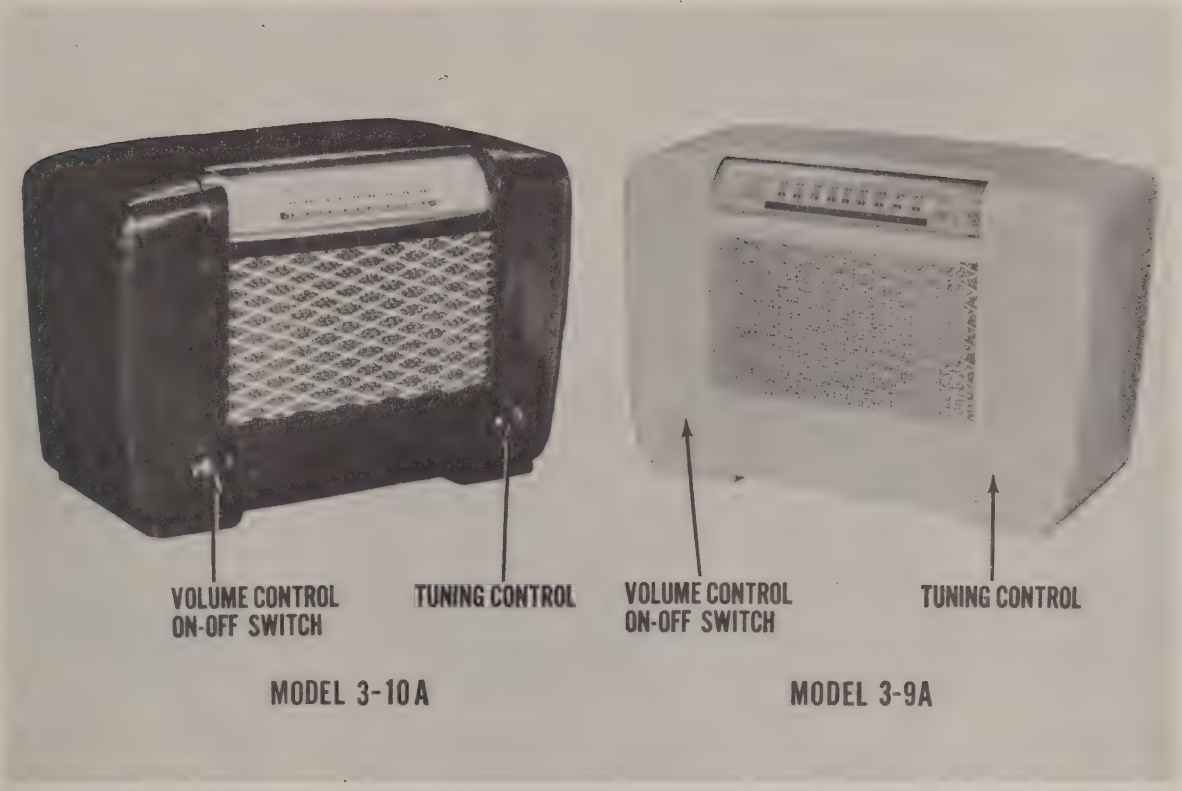
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	190 KΩ	42Ω	0Ω	2.7MEG.	0Ω	29KΩ	32Ω	29KΩ
2	12SA7GT	190 KΩ	32Ω	29KΩ	29KΩ	20.5KΩ	1Ω	22Ω	2.7MEG.
3	12SK7GT	190KΩ	22Ω	0Ω	2.7MEG.	0Ω	29KΩ	12Ω	29KΩ
4	12SQ7GT	190KΩ	6.5MEG.	0Ω	460KΩ	2.7MEG.	350KΩ	12Ω	0Ω
5	35L6GT	INF.	73Ω	29KΩ	29KΩ	430KΩ	350KΩ	42Ω	125Ω
6	35Z5GT	INF.	99Ω	96Ω	INF.	96Ω	INF.	73Ω	29KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

WOOLAROC
MODELS 3-9, 3-10A



WOOLAROC
MODELS 3-9, 3-10A

WOOLAROC MODEL 3-10A

TRADE NAME	Woolaroc Models 3-9A, 3-10A
SUPPLIER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES(FIVE)	Types, 12SA7 1st Det.-Osc., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .245 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Set dial pointer and diffusion plate in position as shown on dial calibration diagram. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #4 (grid) 12SK7. Low side to B-.	455KC	Turn rotor to full open.	Across voice coil	A1,A2	Adjust for maximum output. Use isolation transformer if available. If not, connect capacitor in series with low lead to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
.1 MFD.	High side to pin #8 (grid) 12SA7. Low side to B-.	"	"	"	A3,A4.	"
.1 MFD.	"	1620KC	"	"	A5	"
50 MMFD.	High side to ext. ant. clip. Low side to B-.	1400KC	Tune in 1400 KC signal. (1400KC index line)	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	1st Det.-Osc.	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	50	150	45X341	2N521	DHN-2x50-150	TA-530	PRS150-40-40	EZ5515	Filter - Red
B	50	150							" - Blue
7	.1	400	D66104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.2	200	B67204	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
9	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	50L6 Plate Bypass
10	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
12	.05	200	B66503	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	.001	400	D66102	TP404	S-6-001	TC-21	484-.001	DT6D1	Ant. Coupling
14	220	500	47X468	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
15A	50	300	47X112	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Diode Filter
B	50	300		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	" "
16	47	500	47X446	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	1	36X352	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

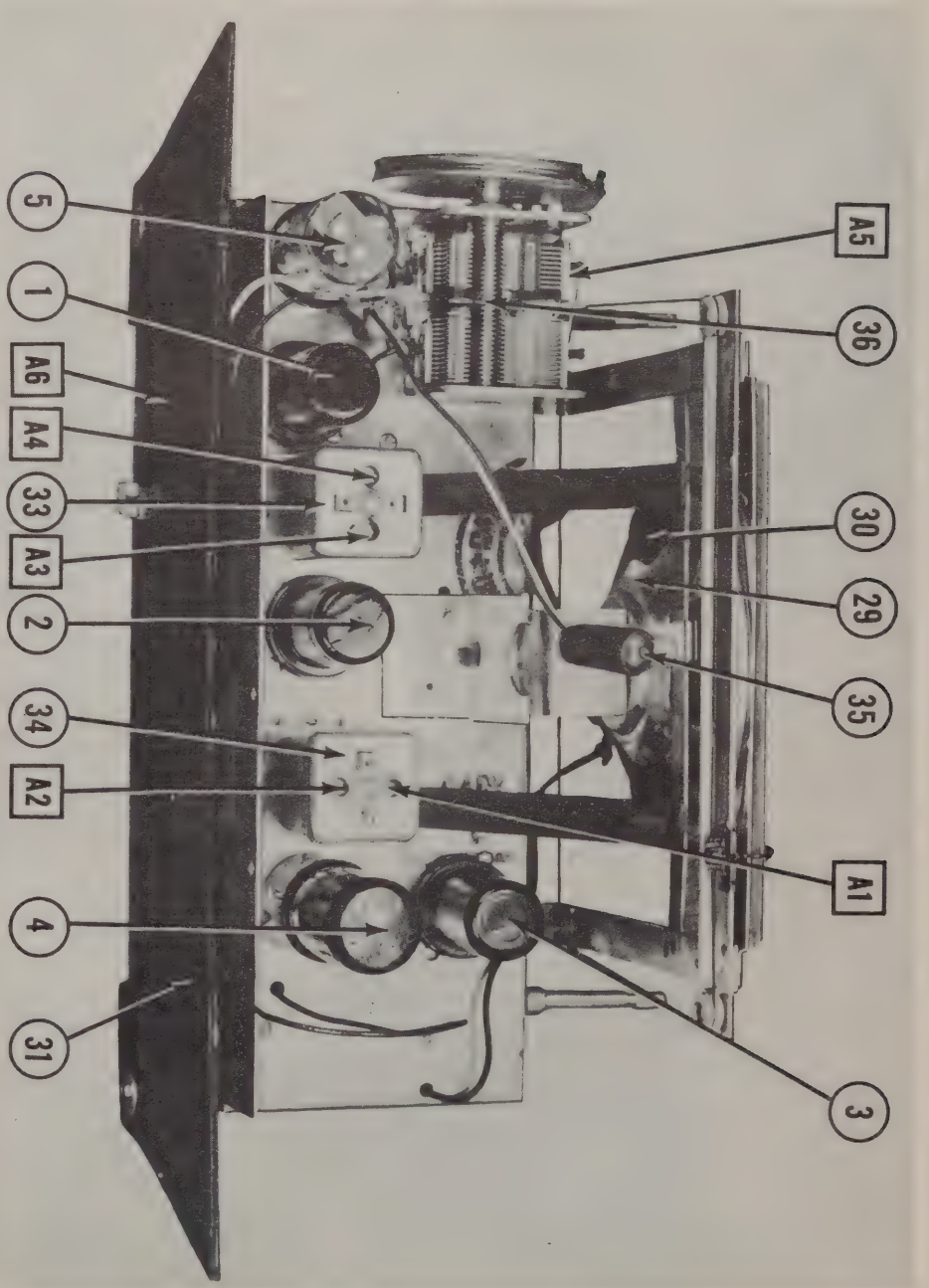
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
18	39KΩ	½	B84393	BTS-39K	Or.-White-Or. Osc. Grid
19	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode Load
21	6.8 Meg.	½	B85685	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
22	470KΩ	½	B84474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
23	470KΩ	½	B84474	BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½	B83151	BW-½-150	Br.-Grn.-Br. Output Cathode
25	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Line Isolating
26	27Ω	½	B84270	BW-½-27	Red-Vi.-Blk. Rectifier Ballast
27	1500Ω	1	C85152	BTA-1500	Br.-Grn.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
28	3000Ω	3.8Ω	200Ω	.65Ω	51X122	A-3876	T-22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA WOOLAROC PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107*		
29	PM	3.8Ω	12A432	Mod. P6-X		*Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
30	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

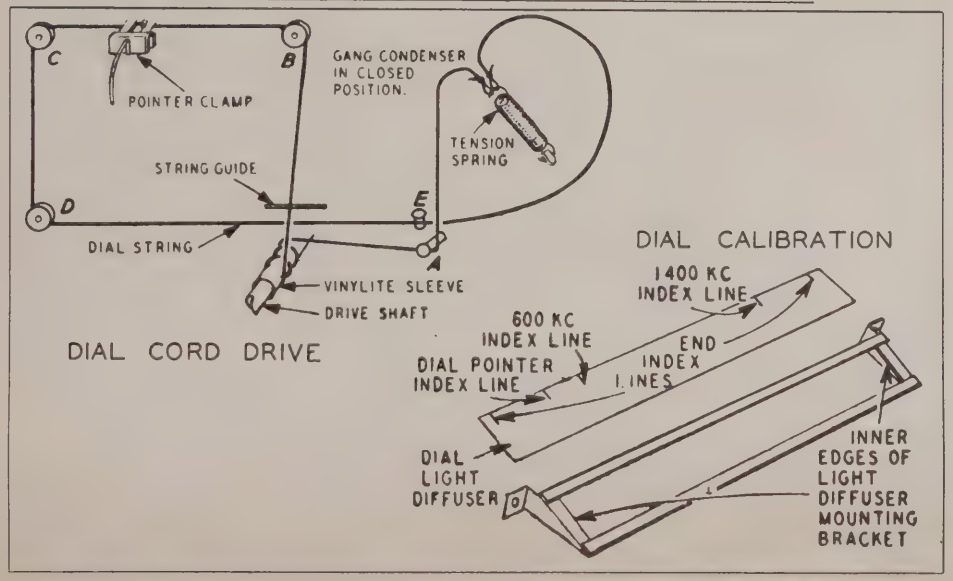
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA WOOLAROC PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
31A	Loop Ant.	.1Ω	1.5Ω	26A406		Walnut Cabinet
B	Loop Ant.	.1Ω	1.5Ω	26A403		Ivory Cabinet
32	Osc. Coil	.5Ω	6Ω	9A1805	14-1040	
33	Input IF	21.3Ω	21.8Ω	9A1808	16-6658	
34	Output IF	23Ω	19Ω	9A1809	16-6660	

DIAL LIGHT

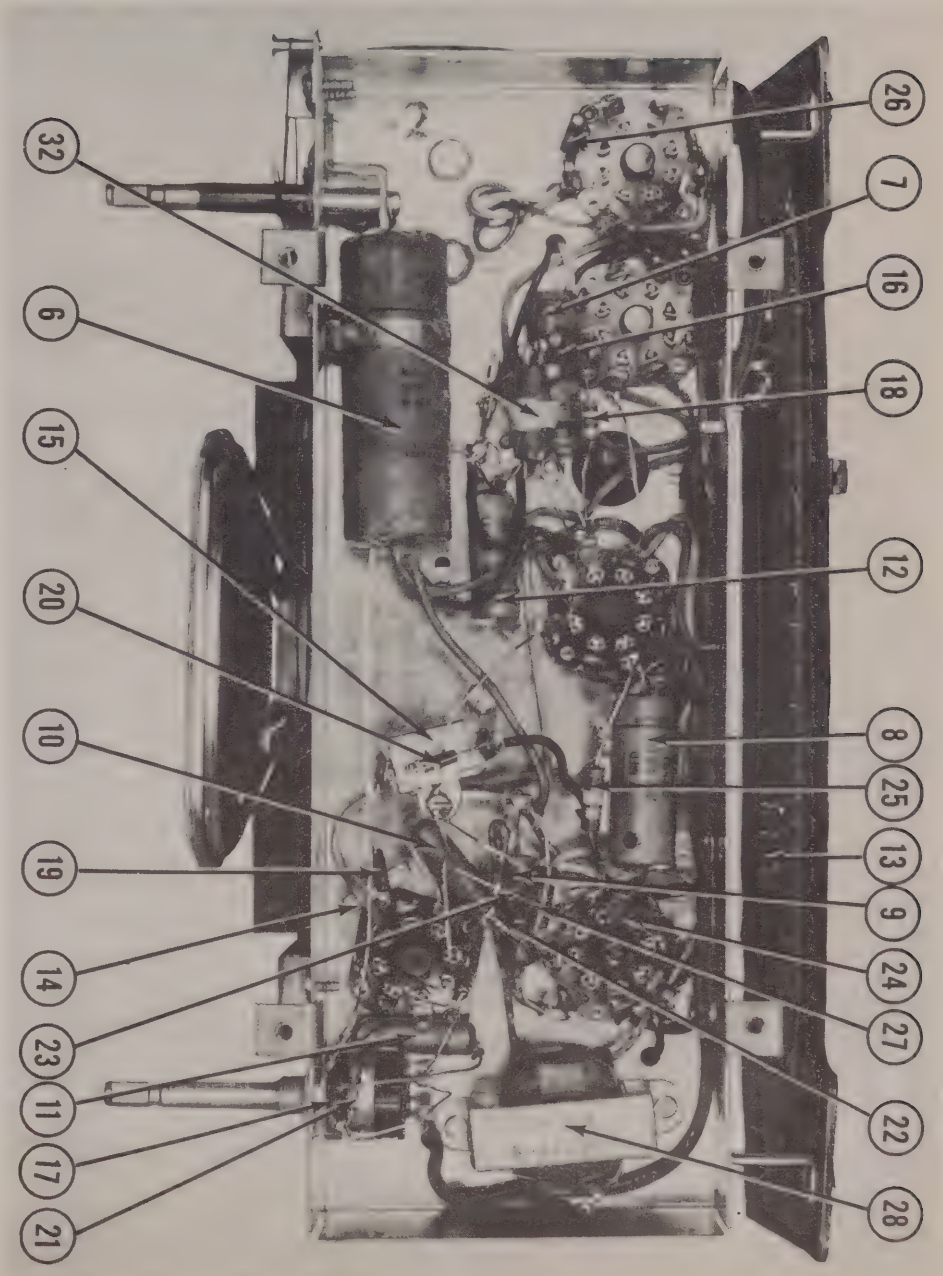
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA WOOLAROC PART No.		INSTALLATION NOTES
35	Bayonet	6-8	0.15	Brown			Type 47

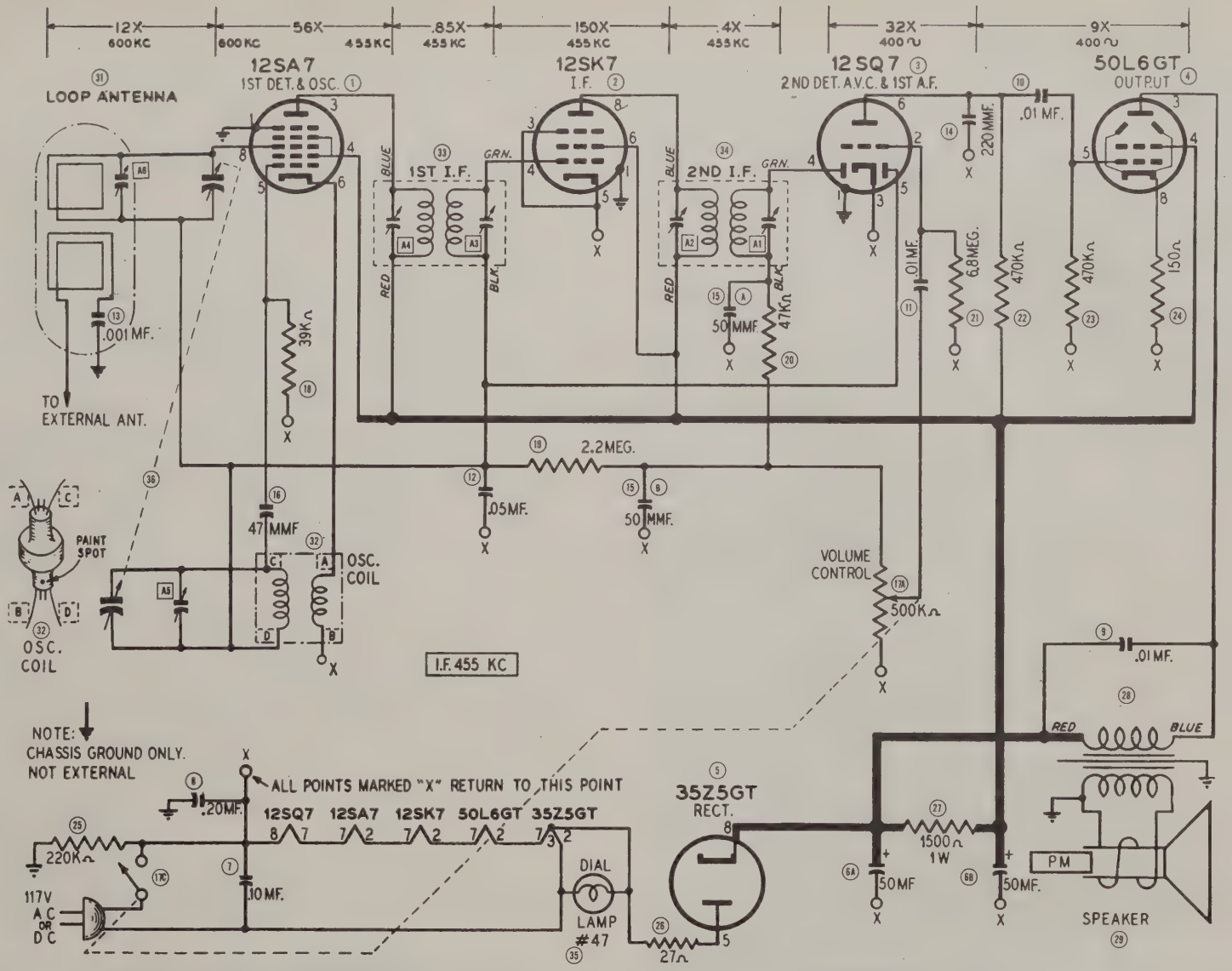
MISCELLANEOUS

ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
36	Tuning Cap.	26A402	2 Gang Variable Cap.
A6	Trimmer	17A123	Ant. Adjust. 1-12 MMF.
	Cabinet	55X255	Ivory
	"	55X267	Walnut
	Knob	10A300	Ivory
	"	10A297	Walnut
	Dial	58X607	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	25V.A.C	82V.DC	82V.DC	-4V.DC	0V.	13V.A.C	-6V.DC
2	12SK7	0V.	36.5V.AC	0V.	-6V.DC	0V.	82V.DC	25V.AC	82V.DC
3	12SQ7	0V.	-4V.DC	0V.	-4V.DC	-65V.DC	55V.DC	13V.AC	0V.
4	50L6	0V.	87V.AC	110V.DC	82V.DC	0V.	0V.	36.5VAC	5.6V.DC
5	35Z5	0V.	117V.AC	113V.AC	0V.	112V.AC	0V.	87V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	240KΩ	24.5Ω	56.5KΩ	56.5KΩ	37KΩ	.5Ω	13Ω	2.8MEG
2	12SK7	240KΩ	34Ω	0Ω	2.8MEG	0Ω	56.5KΩ	24.5Ω	56.5KΩ
3	12SQ7	240KΩ	6 MEG	0Ω	580KΩ	2.8MEG	526KΩ	13Ω	0Ω
4	50L6	240KΩ	83Ω	55KΩ	56.5KΩ	570KΩ	0Ω	34Ω	145Ω
5	35Z5	240KΩ	110Ω	108Ω	INF	130Ω	INF	83Ω	55KΩ

467-30

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WOOLAROC
MODEL 3-29A

WOOLAROC
MODEL 3-29A

WOOLAROC MODEL 3-29A

TRADE NAME	Woolaroc Model 3-29A
SUPPLIER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC Operated Combination Phono-Superheterodyne Receiver-Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC RATING .240 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #4 (grid) 12SK7. Low side to B-.	455KC	Turn rotor full open.	Across voice coil	A1,A2.	Adjust for maximum output. Use isolation transformer if available. If not connect capacitor in series with low lead to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to pin #8 (grid) 12SA7. Low side to B-.	"	"	"	A3,A4.	"
"	"	1620KC	"	"	A5	"
50 MMFD	High side to ext. ant. clip. Low side to chassis.	1400KC	Tune in 1400 KC signal. Set pointer at 1400KC	"	A6	Adjust for maximum output. For this adjustment replace chassis and loop in cabinet.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	50	150	45X341	2N521	DHN-2x50-150	TA-530	PRS150-40-40	EZ5515	Filter - Red
B	50	150							" - Blue
7	.1	400	D67104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.2	200	B67204	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
9	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	50L6 Plate Bypass
10	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
12	.08	200	B66803	TP452	S-4-1	TC-1	484-.075	DT4P1	Phono Coupling
13	.05	200	B66503	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.001	400	D67102	TP404	S-6-001	TC-21	484-.001	DT6D1	Ant. Coupling
15	220	500	47X468	MC237	M0.5-32	1FM-32	1468-.0002	5W5T2	Audio Plate Bypass
16A	50	500	47X112	MC225	M0.5-45	1FM-45	1468-.0005	5W5T5	Diode Filter
B	50	500		MC225	M0.5-45	1FM-45	1468-.0005	5W5T5	" "
17	47	500	47X446	MC225	M0.5-45	1FM-45	1468-.0005	5W5T5	Osc. Grid Capacitor

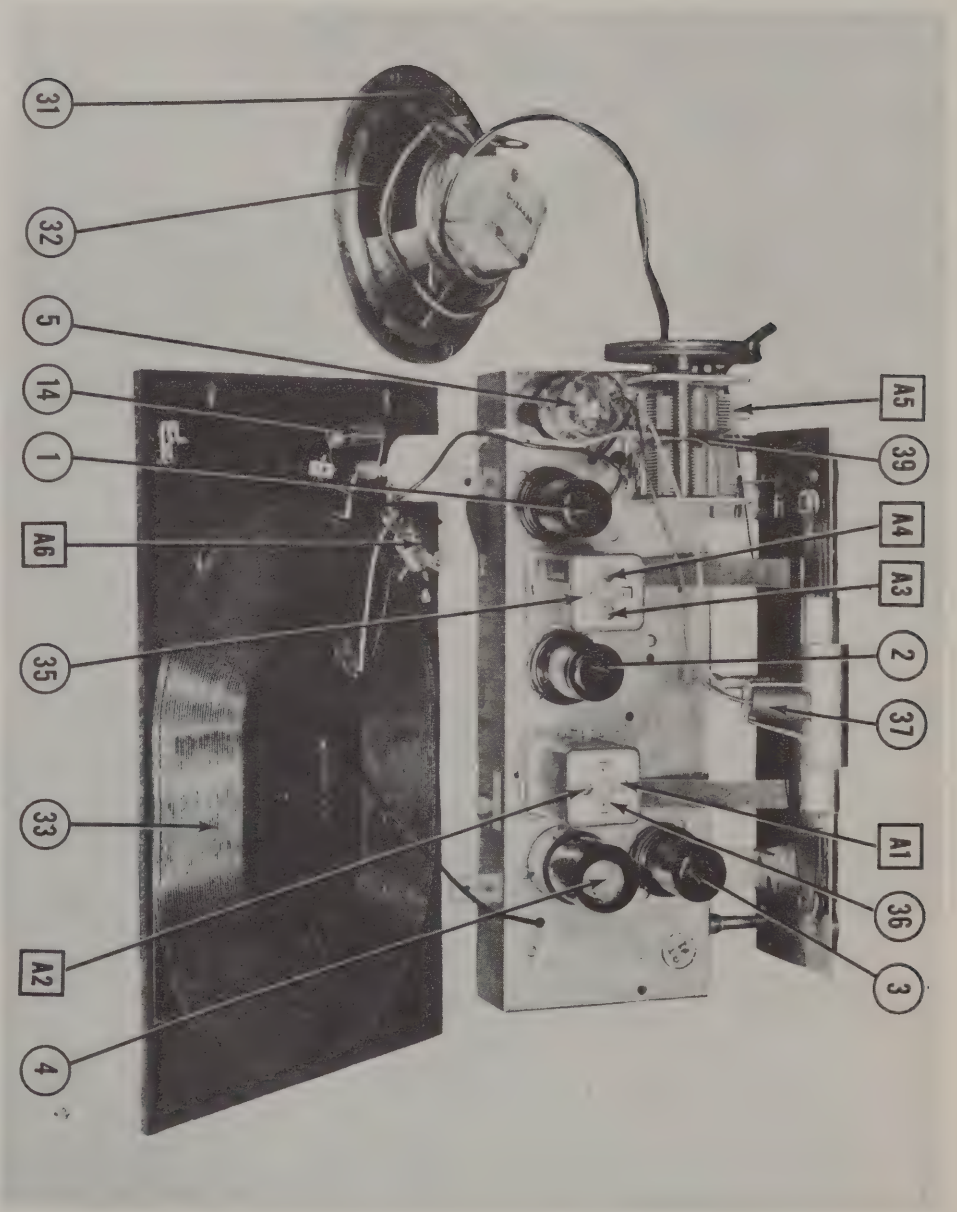
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
18A	500KΩ	1	36X352	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 18A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
19	39KΩ	½	B84393	BTS-39K	Or.-White-Or. Osc. Grid
20	2.2 Meg.	½	B85225	BTS-2.2 Meg	Red-Red-Grn. AVC Network
21	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. IF Filter
22	6.8 Meg.	½	B85685	BTS-6.8 Meg	Blue-Gray-Grn. 1st AF Grid
23	470KΩ	½	B84474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
24	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	B83151	BW-½-150	Br.-Grn.-Br. Output Cathode
26	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Line Isolating
27	27Ω	½	B84270	Bw-½-27	Red-Vi.-Blk. Rectifier Ballast
28	1500Ω	1	C85152	BTA-1500	Br.-Grn.-Red Filter
29	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
30	2700Ω	3.4Ω	200Ω	.62Ω	51X123	A-3876	T-22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WOOLAROC PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105		
31	PM	3.4Ω	12A438	Mod. P5-X		
	CONE DIA.	VC DIA.				
32	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	WOOLAROC PART No.	MEISSNER PART No.	
33	Loop Ant.	.1Ω	2.2Ω	26A413		
34	Osc. Coil	.5Ω	6Ω	9A1805	14-1040	
35	Input IF	21.3Ω	21.8Ω	9A1808	16-6658	
36	Output IF	23Ω	19Ω	9A1809	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WOOLAROC PART No.		
37	Bayonet	6-8	.15	Brown			Type 47

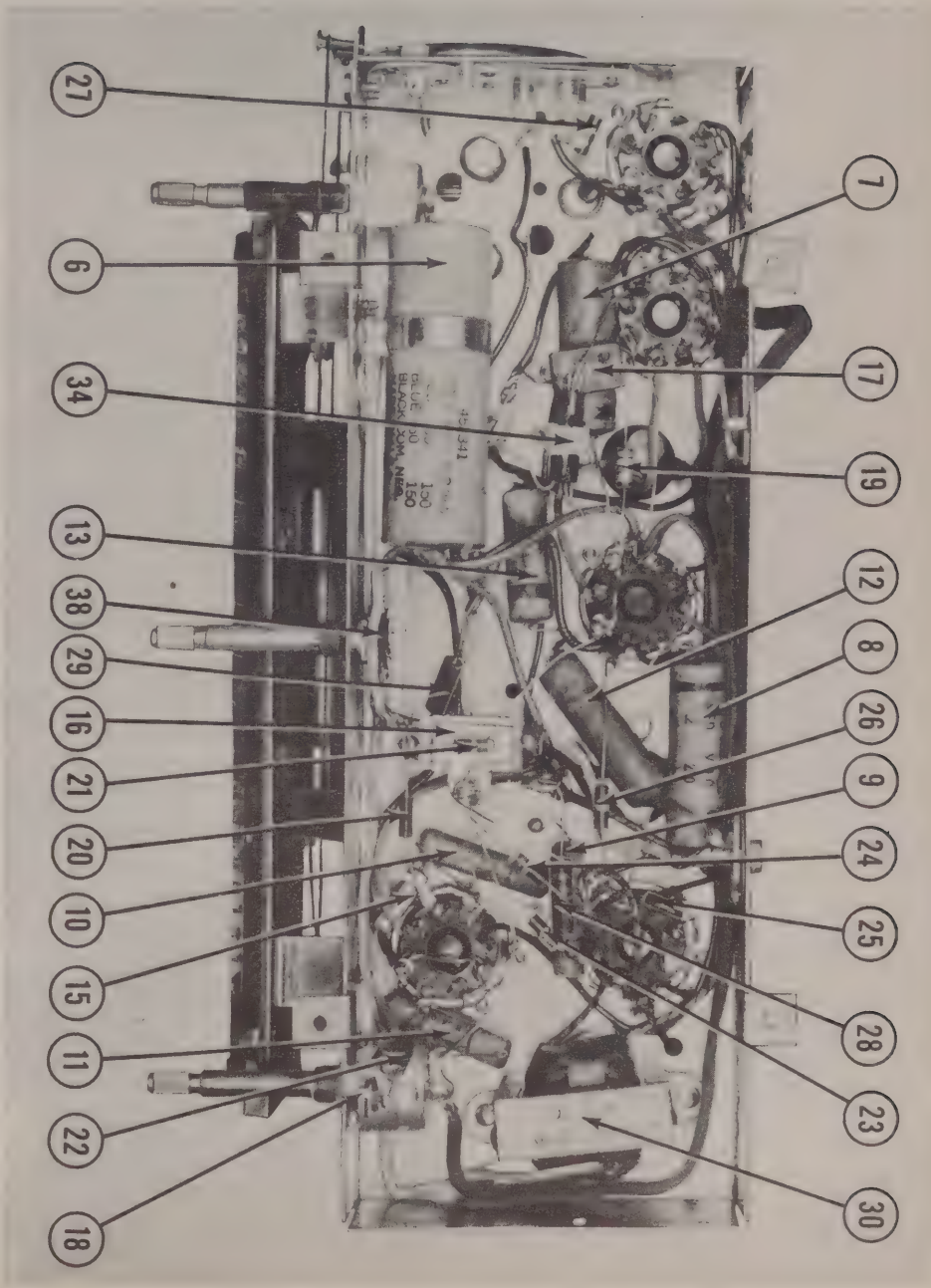
MISCELLANEOUS

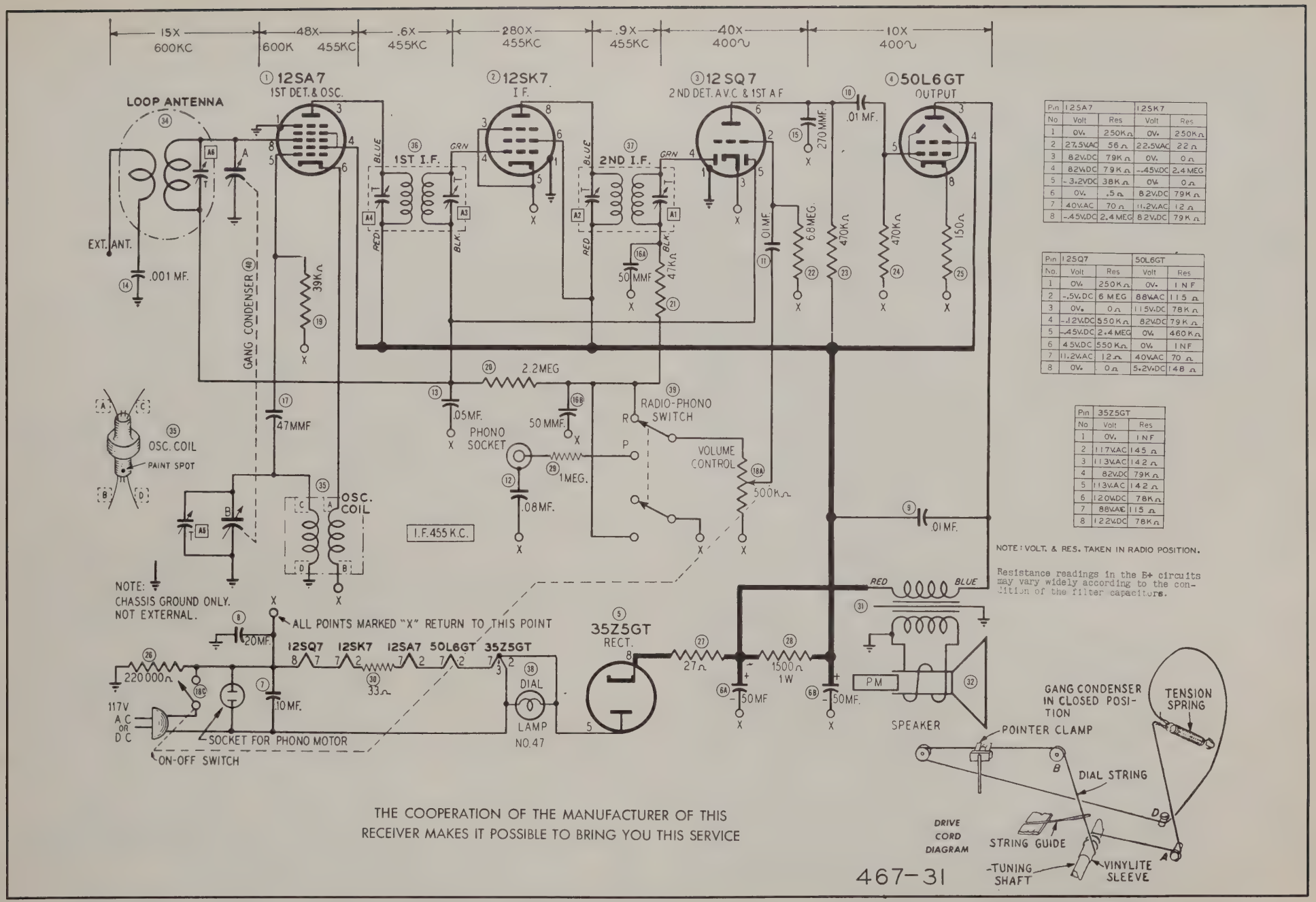
ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
38	Switch	2A358	Radio-Phono
39	Tuning Cap	26A402	2 Gang Variable Cap.
A6	Trimmer Cap.	17A123	Ant. Adj. 1-12 MMF.
	Knob	10A297	Volume Control, Tuning
	Knob	10A584	Radio-Phono
	Crystal	Astatic L-75	or Equivalent
	Dial	58X610	
	Pointer	15X150	Dial

DISASSEMBLY INSTRUCTIONS

1. Remove the following push-on type control knobs: Volume, Phono-Radio and Tuning.
2. Disconnect the phono-motor and pickup plugs.
3. Disconnect the speaker plug.
4. Remove two wood screws holding loop antenna to cabinet.
5. Remove chassis board lock-bar holding chassis to cabinet.
6. Slide chassis and loop antenna out together.
7. Remove four hex screws and washers holding chassis to chassis board. Remove chassis.
8. Remove four nuts, lock-washers and spacers from speaker bolts. Remove speaker.

CHASSIS—BOTTOM VIEW





Pin No	12SA7 Volt	12SA7 Res	12SK7 Volt	12SK7 Res
1	0V.	250KΩ	0V.	250KΩ
2	27.5VAC	56Ω	22.5VAC	22Ω
3	82V.DC	79KΩ	0V.	0Ω
4	82V.DC	79KΩ	-.45V.DC	2.4 MEG
5	-3.2VDC	38KΩ	0V.	0Ω
6	0V.	.5Ω	82V.DC	79KΩ
7	40V.AC	70Ω	11.2V.AC	12Ω
8	-.45V.DC	2.4 MEG	82V.DC	79KΩ

Pin No.	12SQ7 Volt	12SQ7 Res	50L6GT Volt	50L6GT Res
1	0V.	250KΩ	0V.	INF
2	-.5V.DC	6 MEG	88VAC	115Ω
3	0V.	0Ω	115V.DC	78KΩ
4	-.12V.DC	550KΩ	82V.DC	79KΩ
5	-.45V.DC	2.4 MEG	0V.	460KΩ
6	45V.DC	550KΩ	0V.	INF
7	11.2VAC	12Ω	40VAC	70Ω
8	0V.	0Ω	5.2V.DC	148Ω

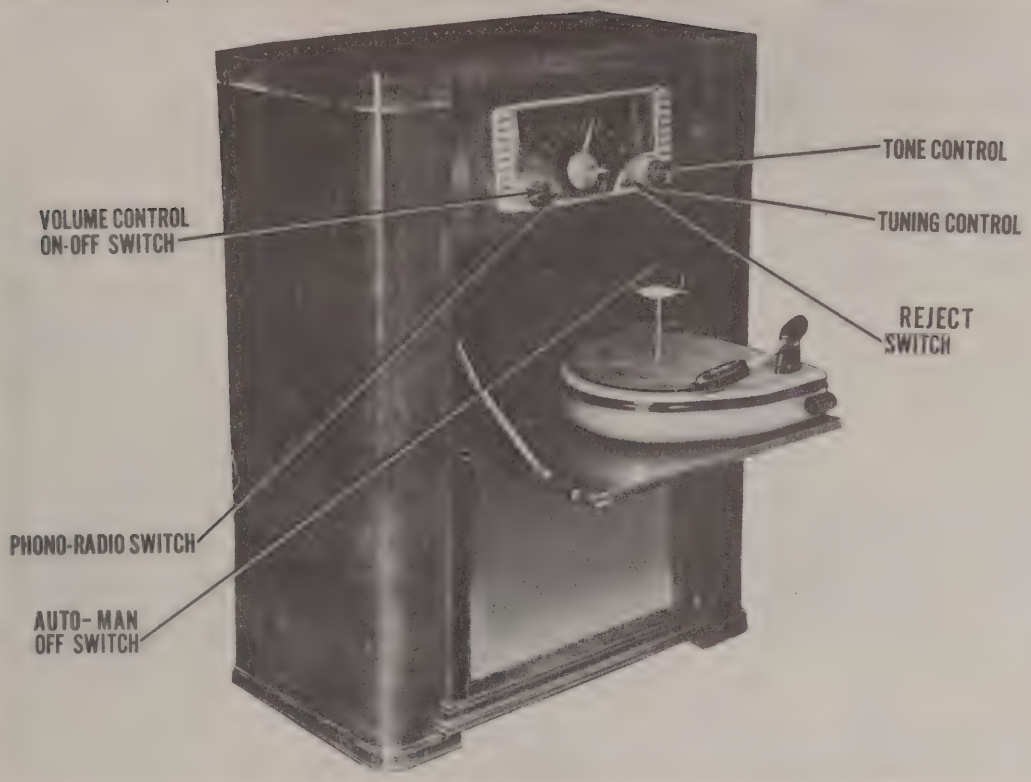
Pin No	35Z5GT Volt	35Z5GT Res
1	0V.	INF
2	117VAC	145Ω
3	113VAC	142Ω
4	82VDC	79KΩ
5	113VAC	142Ω
6	120VDC	78KΩ
7	88VAC	115Ω
8	122VDC	78KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

467-31

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ZENITH
MODEL 6R087

ZENITH
MODEL 6R087

ZENITH MODEL 6R087

TRADE NAME	Zenith Model 6R087 (Chassis No. 6C22)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC Operated Combination Automatic Phono.-Superheterodyne Receiver, Self Contained Loop Antenna
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	110-125 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .450 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed, and set pointer at reference mark at the left end of the dial. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.5 MFD.	High side to pin #8 of 6SA7. Low side to chassis.	455KC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
	Loop	1600KC	1600KC	"	A5	Connect output of signal generator to one turn of wire. Couple loosely to wavemagnet and radiate signal into wavemagnet. Adjust for maximum output.
	"	1400KC	Tune for maximum output.	"	A6	"
	"	1400KC	"	"	A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	15	450	22-1372		DHS-2x16-450	TU-1616		EZ5116	♠ Filter ■ Neg.
B	15	350							▲ " Can Neg.
8	.005	400	22-1041	TP408	S-6-005	TC-25	484-005	DT6D5	Line Bypass
9	.004	600	22-448	TP407	S-6-004	TC-24	684-004	DT6D4	6K6 Plate Bypass
10	.02	600	22-830	TP412	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
11	.2	200	22-138	TP429	S-4-2	TC-2	484-.2	DT4P2	Bias Filter
12	.004	600	22-448	TP407	S-6-004	TC-24	684-004	DT6D4	Tone Compensation
13	.0005	600	22-854	TP403	S-6-0005	TC-35	1468-0005	DT6T5	Audio Plate Bypass
14	.004	600	22-1362	TP407	S-6-004	TC-24	684-004	DT6D4	Audio Coupling
15	.03	200	22-1157	TP424	S-6-03	TC-13	484-03	DT4S3	Tone Compensation
16	.02	200	22-1386	TP423	S-4-02	TC-12	484-02	DT4S2	Radio Muting
17	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
18	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	" "
19	.05	600	22-171	TP415	S-6-05	TC-16	684-05	DT6S5	Plate Bypass
20	.05	600	22-171	TP415	S-6-05	TC-15	684-05	DT6S5	Screen Bypass

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	63-1340	TM231	D19-133X	AT-90	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
22	1 Meg.	1	63-1341				Tone Control

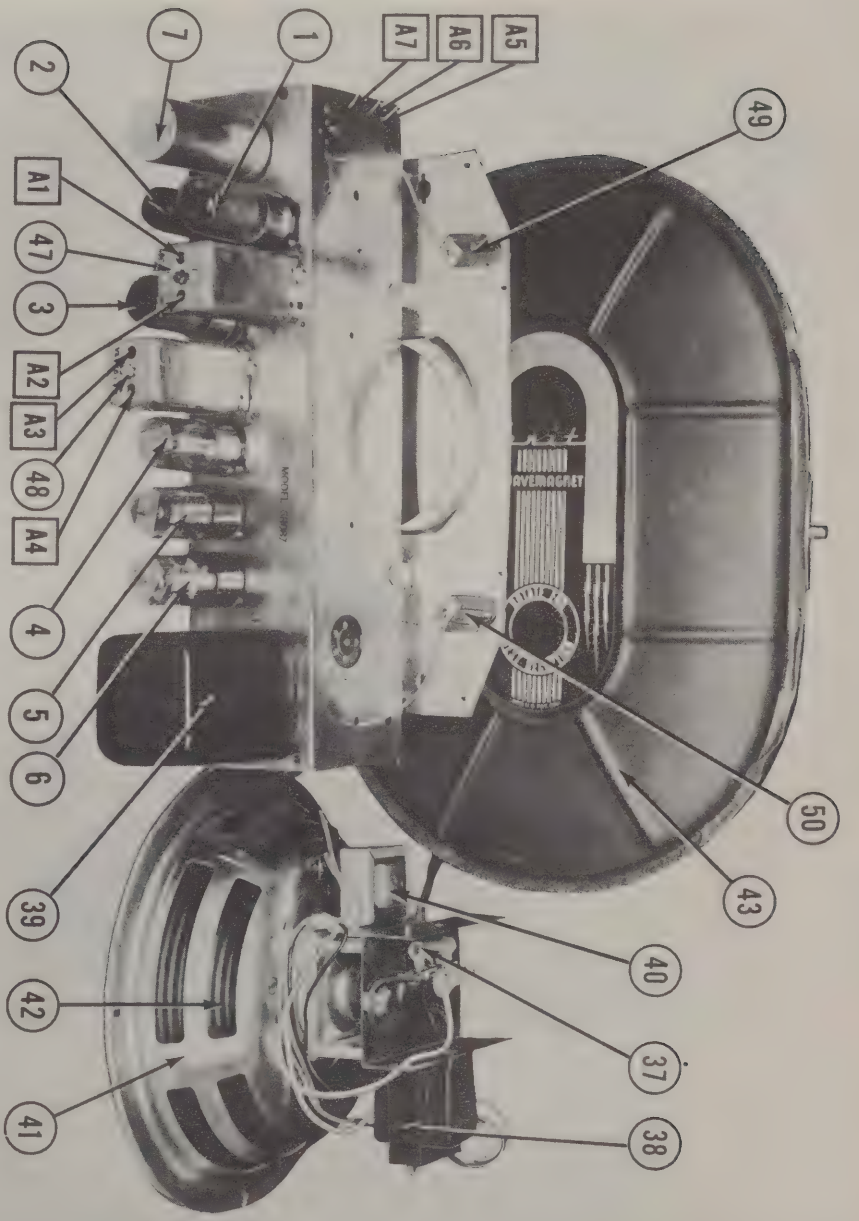
RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
23	10KΩ	1	63-156	BTA-10K	Br.-Blk.-Or. RF Plate Load
24	220KΩ	½	63-296	BTS-220	Red-Red-Yl. AVC Network
25	220Ω	½	63-579	BW-½-220	Red-Red-Br. Parasitic Suppressor
26	8.2 Meg.	½	63-673	BTS-8.2 Meg.	Gray-Red-Grn. AVC Network
27	10KΩ	½	63-589	BTS-10K	Br.-Blk.-Or. Oscillator Grid
28	1000Ω	½	63-605	BTS-1000	Br.-Blk.-Red Series Dropping
29	2.2 Meg.	½	63-600	BTS-2.2	Red-Red-Grn. AVC Network
30	22KΩ	2	63-1058	BT-2-22K	Red-Red-Or. Screen Dropping
31	22KΩ	½	63-591	BTS-22K	Red-Red-Or. Tone Compensation
32	15 Meg.	½	63-976	BTS-15	Br.-Grn.-Blue 1st AF Grid
33	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. 1st AF Plate Load
34	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	220KΩ	½	63-655	BTS-220K	Red-Red-Yl. Voltage Divider Bias
36	270KΩ	½	63-656	BTS-270K	Red-Vi.-Yl. Voltage Divider Bias
37	400Ω	10		AB-400	Filter

FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA ZENITH PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	INSTALLATION NOTES
38	.068A.	390Ω	7 Henries	95-1019	C-1420	T-20C53	†Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	
39	117VAC @ .450A	580VCT @ .068A	6.4VAC @ 2.7A		95-911	P-6120*	T-22R02*	*Drill mounting holes and use universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No. -		
	PRI.	SEC.	PRI.	SEC.					
40	6500Ω	3.9Ω	560Ω	.35Ω	Part of 49-581	A-3849	T-22S47		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	ZENITH PART No.	JENSEN PART No.		
41A	PM	3.9Ω	49-581	ST-120		
B			49-526	Mod. P10-S		Alternate Speaker
	CONE DIA.	VC DIA.				
42	9-3/4"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

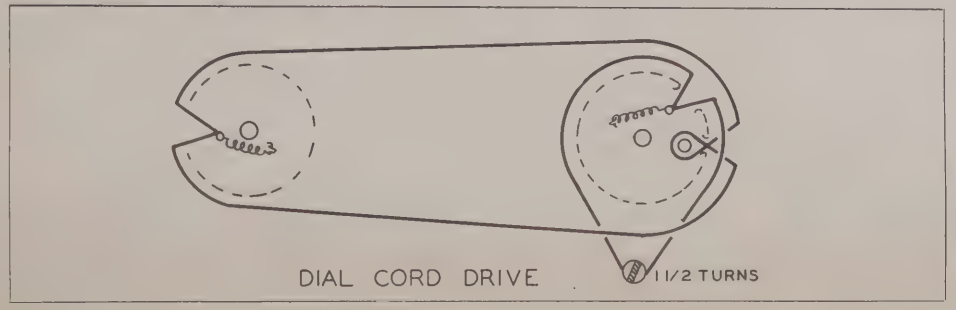
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
43	Loop Ant.	.1Ω	1Ω	S11450		
44	Loading Coil	1.8Ω		S11896		
45	RF Coil	2Ω	9Ω	S11163		
46	Osc. Coil	1Ω	7.8Ω	S11164		
47	Input IF	11.5Ω	11.5Ω	95-909	16-6658	
48	Output IF	27Ω		95-910	16-6670	

DIAL LIGHT

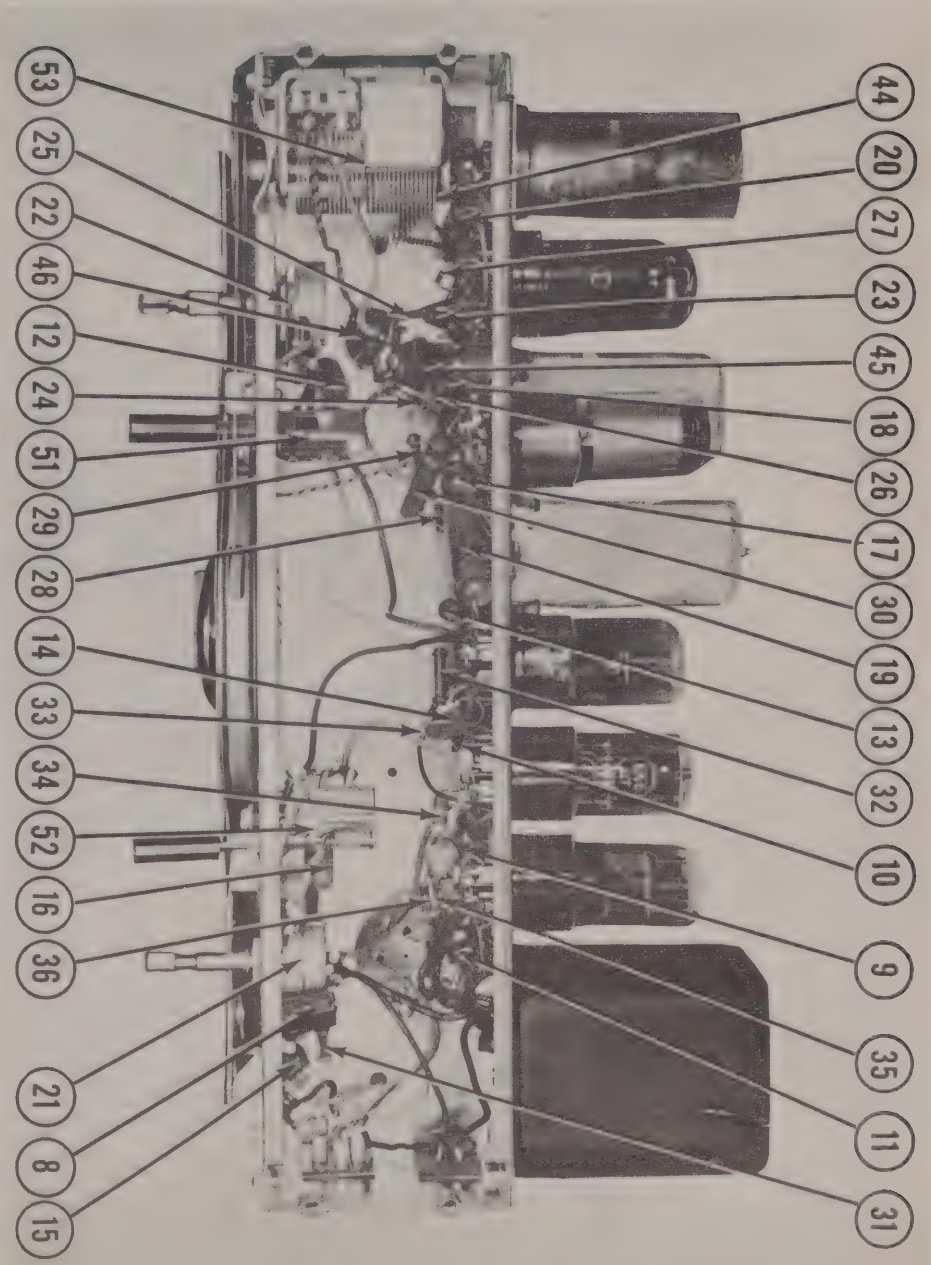
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ZENITH PART No.		
49	Bayonet	6-8	.25	Blue	100-36		Type 44
50	"	6-8	.25	"	100-36		" "

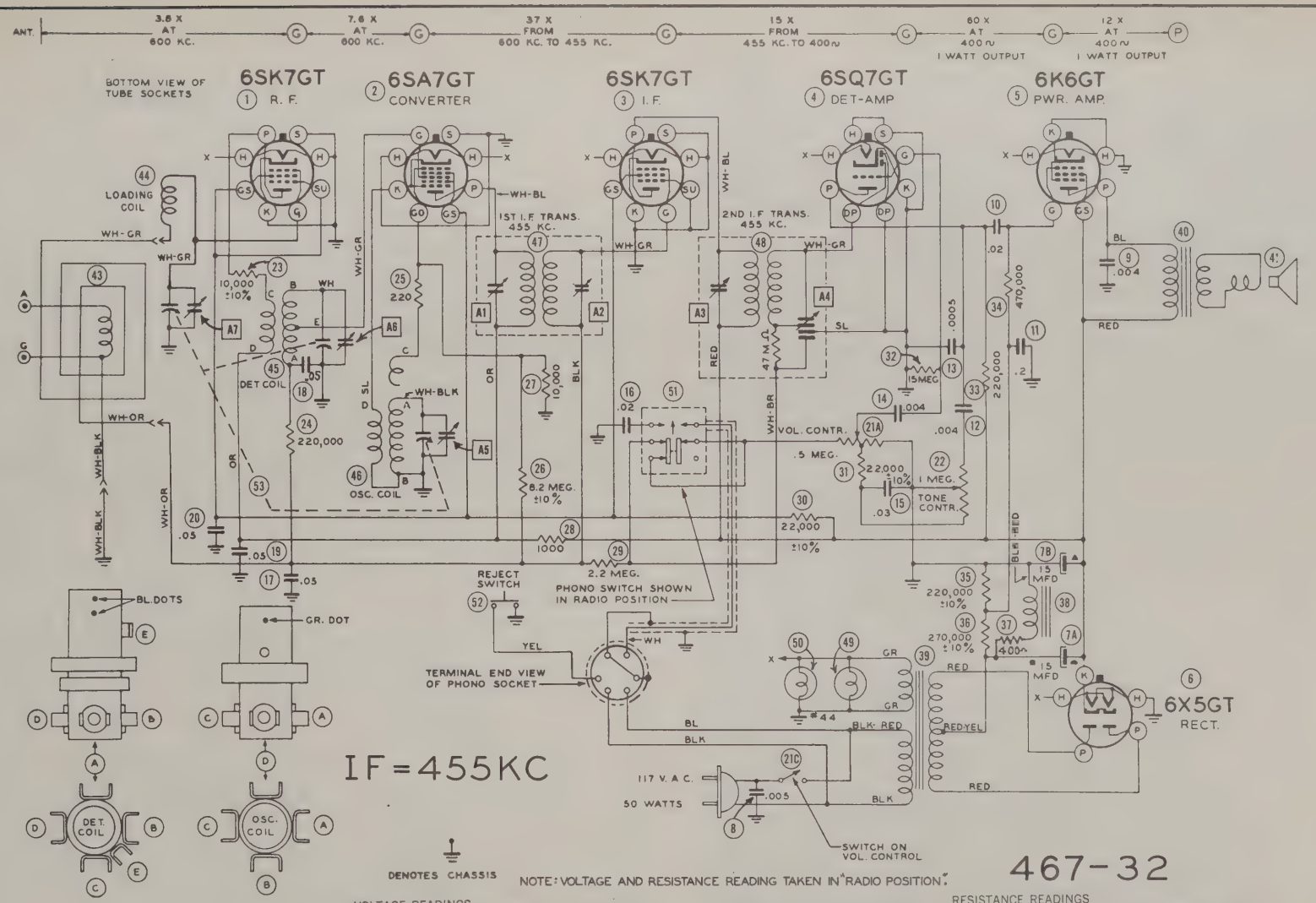
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
51	Switch	85-337	Radio-Phono
52	Reject Switch	85-349	
53	Tuning Cap.	22-1369	3 Gang Variable Cap.
	Phono Socket	78-623	



CHASSIS—BOTTOM VIEW




ANT.
3.8 X AT 600 KC.
7.6 X AT 600 KC.
37 X FROM 600 KC. TO 455 KC.
15 X FROM 455 KC. TO 400 ~
60 X AT 400 ~ 1 WATT OUTPUT
12 X AT 400 ~ 1 WATT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
6SK7GT 1 R. F.
6SA7GT 2 CONVERTER
6SK7GT 3 I. F.
6SQ7GT 4 DET-AMP
6K6GT 5 PWR. AMP.
LOADING COIL
1ST I.F. TRANS. 455 KC.
2ND I.F. TRANS. 455 KC.
DET COIL
OSC. COIL
VOL. CONTR. .5 MEG.
TONE CONTR. 1 MEG.
REJECT SWITCH
PHONO SWITCH SHOWN IN RADIO POSITION
TERMINAL END VIEW OF PHONO SOCKET
BL. DOTS
GR. DOT
DET. COIL
OSC. COIL
117 V. A. C. 50 WATTS
SWITCH ON VOL. CONTROL
6X5GT RECT.
IF=455KC
DENOTES CHASSIS
NOTE: VOLTAGE AND RESISTANCE READING TAKEN IN "RADIO POSITION".
467-32

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	57V.DC	-55V.DC	0V.	57V.DC	6.5V.AC	162V.DC
2	6SA7	0V.	6.5V.AC	242V.DC	-57V.DC	-25V.DC	0V.	0V.	-35V.DC
3	6SK7GT	0V.	0V.	0V.	-55V.DC	0V.	57V.DC	6.5V.AC	265V.DC
4	6SQ7GT	0V.	-6V.DC	0V.	0V.	-25V.DC	122V.DC	6.5V.AC	0V.
5	6K6GT	0V.	0V.	240V.DC	265V.DC	-18V.DC	-3V.DC	6.5V.AC	0V.
6	6X5GT	0V.	0V.	285V.AC	0V.	285V.AC	0V.	6.5VAC	265V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	122 KΩ	1.7 MEG.	0Ω	122 KΩ	.1Ω	111 KΩ
2	6SA7	0Ω	.1Ω	100 KΩ	122 KΩ	8.5 KΩ	1Ω	0Ω	2 MEG.
3	6SK7GT	0Ω	0Ω	0Ω	1.7 MEG.	0Ω	122 KΩ	.1Ω	100 KΩ
4	6SQ7GT	0Ω	15 MEG.	0Ω	0Ω	240 KΩ	320 KΩ	.1Ω	0Ω
5	6K6GT	0Ω	0Ω	100 KΩ	100 KΩ	540 KΩ	196 KΩ	.1Ω	0Ω
6	6X5GT	0Ω	0Ω	740 KΩ	INF.	725Ω	INF.	.1Ω	100 KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODEL 8G005Y

TRADE NAME	Zenith Model 8G005Y(Ch. No. 8C40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	Three Power Portable AC-DC Battery Six Band Superhet. - Self Contained Loop Antenna
TUBES (EIGHT)	Types, 1LN5 RF Amp., 1LC6 Converter, 1LN5 IF Amp., 1LD5 Det.-Amp., 1LE3 Inverter, 2 - 1LB4 Power Output, 117Z6G/GT Rectifier.
POWER SUPPLY	117 Volts AC-DC or 90 Volts "B" Supply & 10.5 Volts "A" Supply
RATING	.180 Amps. @ 117V AC - 54MA @ 10.5V DC & 19 MA @ 90V DC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE-6.0-6.27MC, 9.4-9.9MC, 11.6-12.1MC, 15.0 -15.6MC, 17.5-18.3MC

ALIGNMENT INSTRUCTIONS

Use battery power when aligning whenever possible. Set the chassis over a metal plate approximately the same distance the battery pack is from the bottom of the chassis when it is in the cabinet. If AC power is used during alignment use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Care should be taken when reinstalling chassis in cabinet that the cabling between the short wave coil assembly and chassis is not disturbed.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 6 (grid) of 1LC6. Low side to B-.	455KC	BC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output If aligning on AC and isolation trans. is not used, reduce dummy to .001 MFD. to reduce hum modulation.
	Loop.	1600KC	"	1600KC	"	A5	Connect output from signal generator to one turn loop and radiate signal into wavemagnet. Adjust for maximum output.
	"	1400KC	"	Tune for maximum output.	"	A6	"
	"	"	"	"	"	A7	"
	To wave rod. (Extended)	6.1MC	49 Met.	6.1MC	"	A8,A9, A10	Connect output of signal generator to 3 ft. of wire and place one foot from waverod. Adjust for maximum output in order given.
	"	9.6MC	31 Met.	9.6MC	"	A11,A12 A13.	"
	"	11.8MC	25 Met.	11.8MC	"	A14,A15 A16.	"
	"	15.2MC	19 Met.	15.2MC	"	A17,A18 A19.	"
	"	17.8MC	16 Met.	17.8MC	"	A20,A21 A22.	"
	Loop	15.2MC	19 Met.	Tune for maximum output.	"	A23,A24	Connect output from signal generator to one turn loop and radiate signal into shortwave magnet, waverod collapsed. Adjust for maximum output.
	"	11.8MC	25 Met.	"	"	A25	"
	"	9.6MC	31 Met.	"	"	A26	"
Install chassis in cabinet.							
			BC	Weak station near 1400KC	"	A7	Adjust for maximum output
When receiving normal transmissions on the short wave bands and FM interference is experienced, adjust wave trap trimmer A27 for minimum reponse of the interfering signal.							

ZENITH
MODEL 8 G 005 Y

ZENITH
MODEL 8 G 005 Y

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AO	
2	Converter	1LC6	1LC6	7AK	
3	IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LD5	1LD5	6AX	
5	Inverter	1LE3	1LE3	4AA	
6	Power Output	1LB4	1LB4	5AD	
7	Power Output	1LB4	1LB4	5AD	
8	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

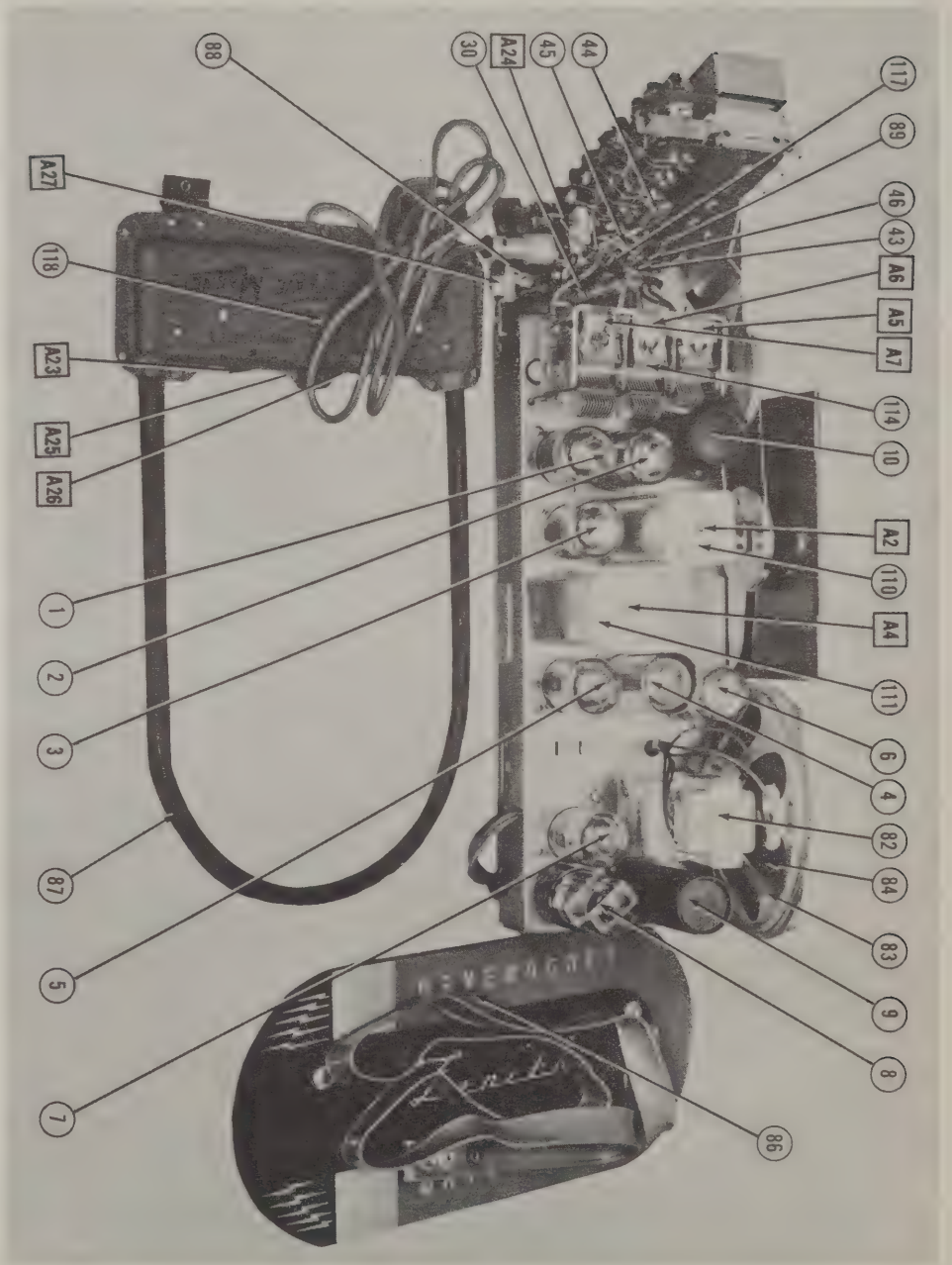
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	150	22-1426	FF357	DY-40+20+10-150	EL-224	AF844D	UP6CJ44	■ Filter
B	20	150							▲ "
C	10	150							
10A	40	150	22-1234	FP304*	DY-40-150			UP4AJ25	■ "
B	200	10			DuM-250-12			BRH1225	▲ "
11	.05	400	22-816	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
12	.05	400	22-818	TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolating
13	.004	600	22-805	TP407	S-6-004	TC-24	684-004	DT6D4	1LB4 Plate Bypass
14	.004	600	22-805	TP407	S-6-004	TC-24	684-004	DT6D4	" " "
15	.01	600	22-811	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
16	.001	600	22-1063	TP404	S-6-001	TC-21	684-001	DT6D1	" " "
17	.01	600	22-811	TP410	S-6-01	TC-11	684-01	DT6S1	1LE3 Grid Bypass
18	.05	200	22-1430	TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolating
19	.05	200	22-817	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Screen Bypass
20	.01	200	22-1437	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
21	.02	200	22-813	TP423	S-4-02	TC-12	484-02	DT4S2	" "
22	.02	200	22-813	TP423	S-4-02	TC-12	484-02	DT4S2	IF Plate Bypass
23	.02	200	22-813	TP423	S-4-02	TC-12	484-02	DT4S2	Filament Bypass
24	.05	200	22-817	TP426	S-4-05	TC-15	484-05	DT4S5	IF Grid Bypass
25	.02	200	22-813	TP423	S-4-02	TC-12	484-02	DT4S2	Filament Bypass
26	.1	200	22-820	TP428	S-4-1	TC-1	484-.1	DT4P1	" "
27	.05	200	22-817	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
28	.05	200	22-817	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
29	.05	200	22-1430	TP426	S-4-05	TC-15	484-05	DT4S5	Gang Cap. Isolation
30	.01	200	22-1437	TP421	S-4-01	TC-11	484-01	DT4S1	" " "
31	.05	200	22-817	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
32	.01	200	22-1437	TP421	S-4-01	TC-11	484-01	DT4S1	Det. Tuned Circuit
33	.01	200	22-1437	TP421	S-4-01	TC-11	484-01	DT4S1	" " "
34	150	500	22-470	MC236	M0.5-315	1FM-315	1468-00015	5W5T15	Audio Plate Bypass
35	200	500	22-953	MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Tone Compensation
36	500	500	22-147	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Audio Coupling
37	500	500	22-147	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation
38	250	500	22-1391	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Osc. Anode Coupling
39	250	500	22-1391	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Osc. Grid Capacitor
40	500	500	22-1390	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	RF Coupling
41	250	500	22-1391	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	" "
42	250	500	22-1391	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
43	500	500	22-1390	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Ant. Coupling
44	500	500	22-1390	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	Fixed Padder
45	25	500	22-1392						Fixed Trimmer Cer.
46	25	500	22-1392						RF Coupling Cer.
47	50	500	22-1393						Osc. Tuned Circuit Cer.
48	53	500	22-1394						" " " "
49	50	500	22-1393						" " " "

*Do not use bypass section

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
50A	1 Meg.	1	63-1344	TM238	D13-137X	T-98	Volume Control
B	Shaft		Not Req.	S825	E	KSS-3	Attach to 50A per instructions
C	Switch		" "	M27	42	Sw-A2	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
51	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
52	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
53	15KΩ	½	63-590	BTS-15K	Br.-Grn.-Or. RF Plate Load
54	2200Ω	½	63-585	BTS-2200	Red-Red-Red RF Screen Dropping
55	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
56	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
57	180KΩ	½	63-654	BTS-180K	Br.-Gray-Yl. Osc. Grid
58	1500Ω	½	63-245	BTS-1500	Br.-Grn.-Red Filament String
59	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
60	68KΩ	½	63-594	BTS-68K	Blue-Gray-Or. Converter Screen Dropping
61	22KΩ	½	63-591	BTS-22K	Red-Red-Or. Osc. Anode
62	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
63	4.7 Meg.	½	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
64	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
65	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. Diode Load
66	33KΩ	½	63-592	BTS-33K	Or.-Or.-Or. Tone Compensation
67	1000Ω	½	63-236	BTS-1000	Br.-Blk.-Red IF Plate Filter
68	15 Meg.	½	63-1093	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
69	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
70	4.7 Meg.	½	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Screen Dropping
71	1 Meg.	½	63-1042	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
72	1500Ω	½	63-245	BTS-1500	Br.-Grn.-Red Filament String
73	1000Ω	½	63-236	BTS-1000	Br.-Blk.-Red Filament String
74	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Red Inverter Grid
75	120KΩ	½	63-771	BTS-120K	Br.-Red-Yl. Inverter Grid Voltage Divider
76	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
77	1 Meg.	½	63-1042	BTS-1 Meg.	Br.-Blk.-Grn. Inverter Plate Load
78	88Ω	3	63-1361	BW-C-88	Surge Limiter
79A	970Ω	3	63-1359	ABA-2000F	Filament Dropping
B	970Ω	3			Filament Dropping
80	1200Ω	½	63-1226	BTS-1200	Br.-Red-Red Filter
81	22KΩ	½	63-591	BTS-22K	Red-Red-Or. Detector Coil Shunt

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
82	1400Ω	3.6Ω	74Ω	.4Ω	Part of 49-617	A-3496†	T-22S481†		†Bend mounting tabs down, file out slots and mount on original bracket.

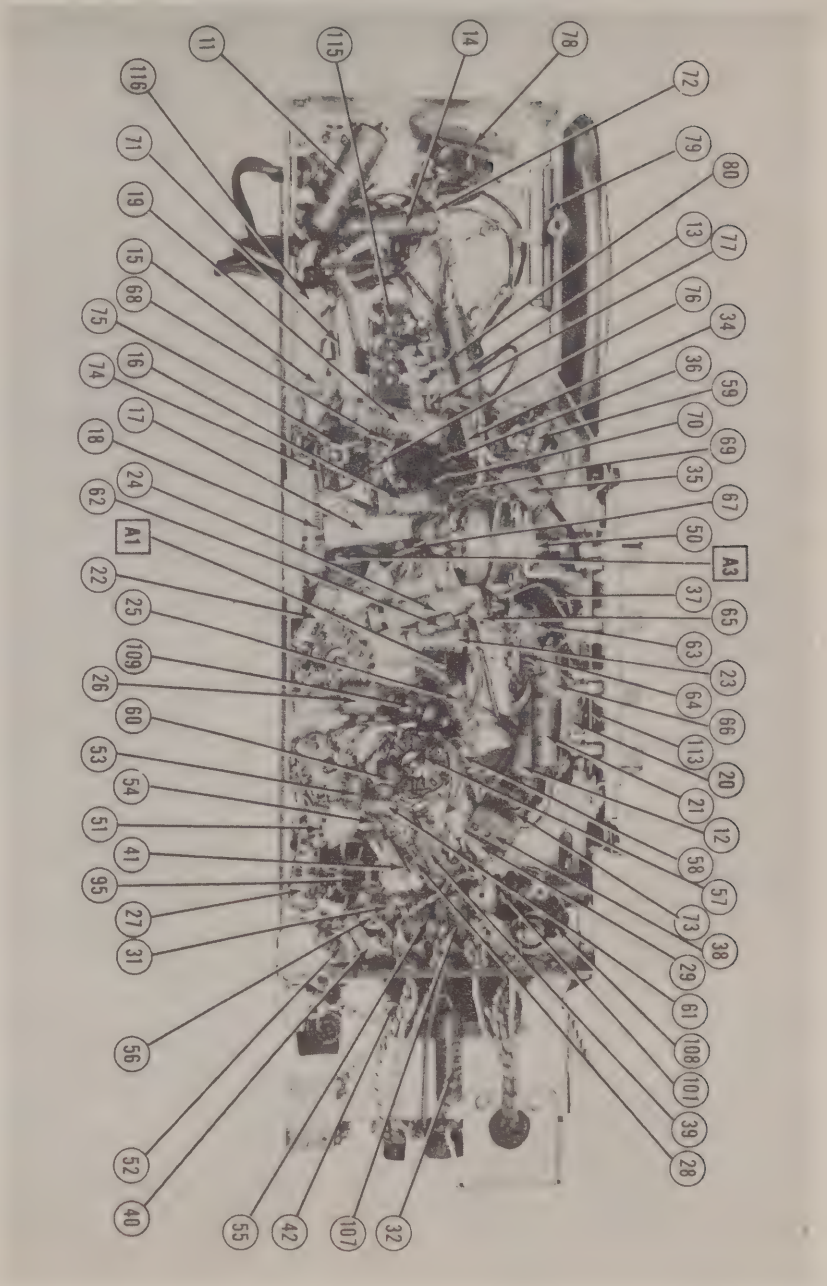
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	ZENITH PART No.	JENSEN PART No.		
83	PM	3.6Ω	49-617	CT-107 Mod. P5-V		
	CONE DIA.	VC DIA.				
84	8-1/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
85	Rod Ant.					
86	BC Loop Ant.		1Ω	S11246		
87	SW " "		.1Ω	S11542		
88	Wave Trap	0Ω		S11821		
89	Ant.Load.Coil		.2Ω	S11591		
90	6MC Ant. "		.1Ω	S11226		
91	9MC " "		0Ω	S11225		
92	12MC " "		0Ω	S11224		
93	15MC " "		0Ω	S11223		
94	18MC " "		0Ω	S11222		
95	BC Det. "	7Ω	4Ω	S11210		
96	6MC " "		.3Ω	S11221		

CHASSIS—BOTTOM VIEW



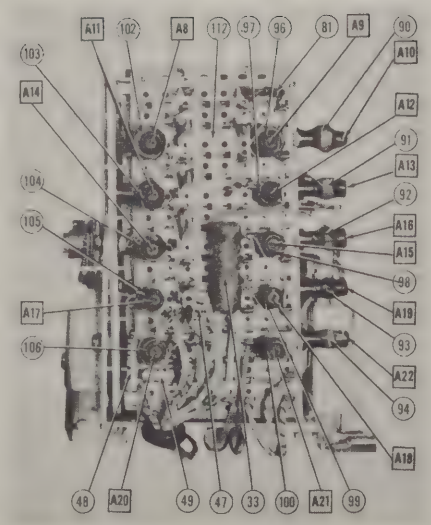
PARTS LIST AND DESCRIPTIONS (Continued)

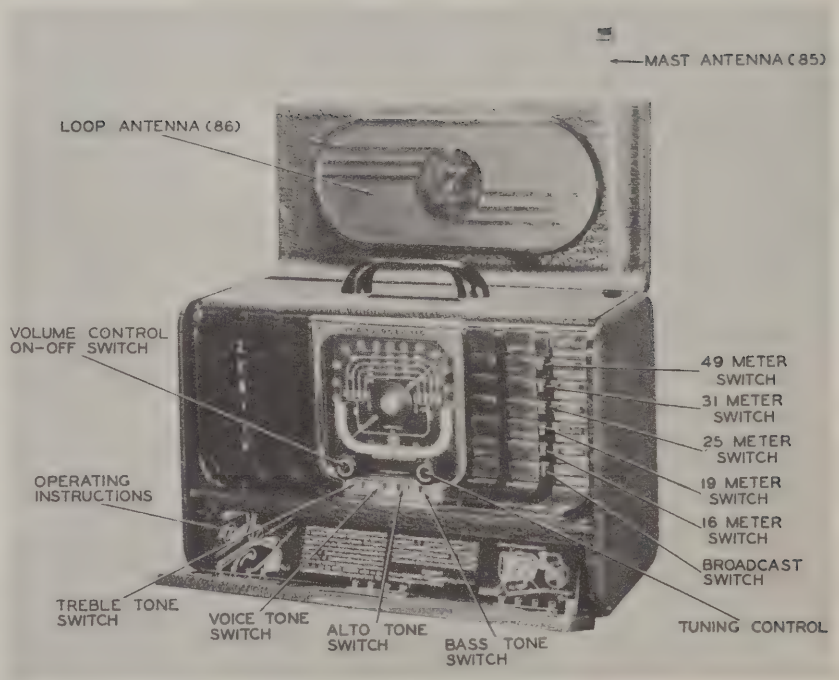
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
97	9MC " "		.3Ω	S11220		
98	12MC " "		.4Ω	S11219		
99	15MC " "		.2Ω	S11218		
100	18MC " "		.1Ω	S11217		
101	BC Osc. "	4Ω	9Ω	S11211		
102	6MC " "		.1Ω	S11216		
103	9MC " "		.1Ω	S11215		
104	12MC " "		.1Ω	S11214		
105	15MC " "		0Ω	S11216		
106	18MC Osc. Coil		0Ω	S11212		
107	RF Choke	1Ω		S11823		
108	RF "	.5Ω		S11822		
109	RF "	3.6Ω		S11952		
110	Input IF	16.5Ω	17Ω	95-912	16-5740	
111	Output IF	16.5Ω		95-913	16-6670	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
112	Band Switch	66-334	
113	Tone Switch	66-332	
114	Tuning Cap.	22-1373	3 Gang Variable Cap.
115	Switch	66-333	Change Over
116	Phone Jack	44-17	
117	Ant. Switch	66-335	
118	SW Switch	66-225	
A23	Trimmer Cap.	22-1329	Wave Booster Adj.
A25	Trimmer Cap.	22-1329	25 Meter SW Adj.
A26	Trimmer Cap.	22-1329	31 Meter SW Adj.
A24	Trimmer Cap.	22-1415	19 Meter Ant. Adj.
A27	" "	22-1426	Ant. Wave Trap Adj.
	Battery Pack	Z-985X	90V "B" Supply - 9V "A" Supply
	Battery Cable	S-11209	





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	6.8V.DC	74V.DC	83V.DC	5.6V.DC	5.6V.DC	.4V.DC	0V.	5.6V.DC
2	1LC6	5.6V.DC	88V.DC	52V.DC	2.2V.DC	36V.DC	.4V.DC	4.2V.DC	4.2V.DC
3	1LN5	4.2V.DC	87V.DC	82V.DC	2.8V.DC	2.8V.DC	.3V.DC	0V.	2.8V.DC
4	1LD5	1.4V.DC	21V.DC	13V.DC	.8V.DC	0V.	0V.	0V.	2.8V.DC
5	1LE3	1.4V.DC	10V.DC	0V.	0V.	0V.	-.05V.DC	0V.	0V.
6	1LB4	8.2V.DC	87V.DC	88V.DC	0V.	.8V.DC	0V.	0V.	6.8V.DC
7	1LB4	9.6V.DC	87V.DC	88V.DC	0V.	0V.	.2V.DC	0V.	8.2V.DC
8	117Z6GT	0V.	117V.AC	117V.AC	113V.DC	117V.AC	0V.	0V.	113V.DC

NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN STANDARD BROADCAST POSITION. TONE CONTROL SWITCHES IN LEFT POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	60Ω	17KΩ	5KΩ	53Ω	53Ω	2.5MEG.	INF.	53Ω
2	1LC6	53Ω	3KΩ	28KΩ	107KΩ	80KΩ	1.5MEG.	45Ω	45Ω
3	1LN5	44Ω	4KΩ	5KΩ	35Ω	35Ω	1.6MEG.	INF.	35Ω
4	1LD5	21Ω	850KΩ	5MEG	450KΩ	INF.	13MEG	INF.	35Ω
5	1LE3	21Ω	1.1MEG.	125KΩ	1.3MEG	INF.	900KΩ	INF.	0Ω
6	1LB4	68Ω	3.2KΩ	3KΩ	INF.	1.1MEG.	1.3MEG.	INF.	60Ω
7	1LB4	76Ω	3.2KΩ	3KΩ	INF.	INF.	900KΩ	INF.	68Ω
8	117Z6GT	INF.	245Ω	245Ω	2KΩ	245Ω	INF.	0Ω	2KΩ

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2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
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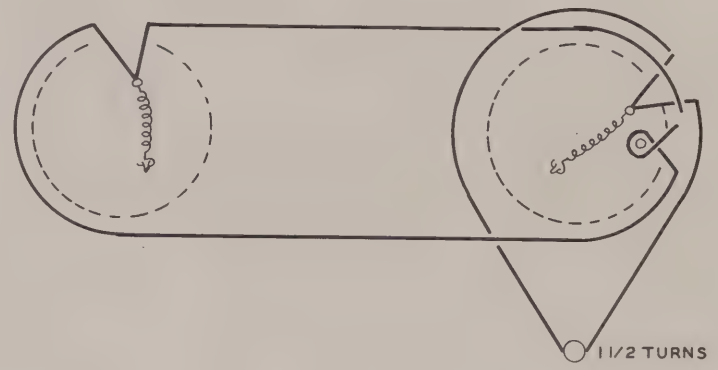
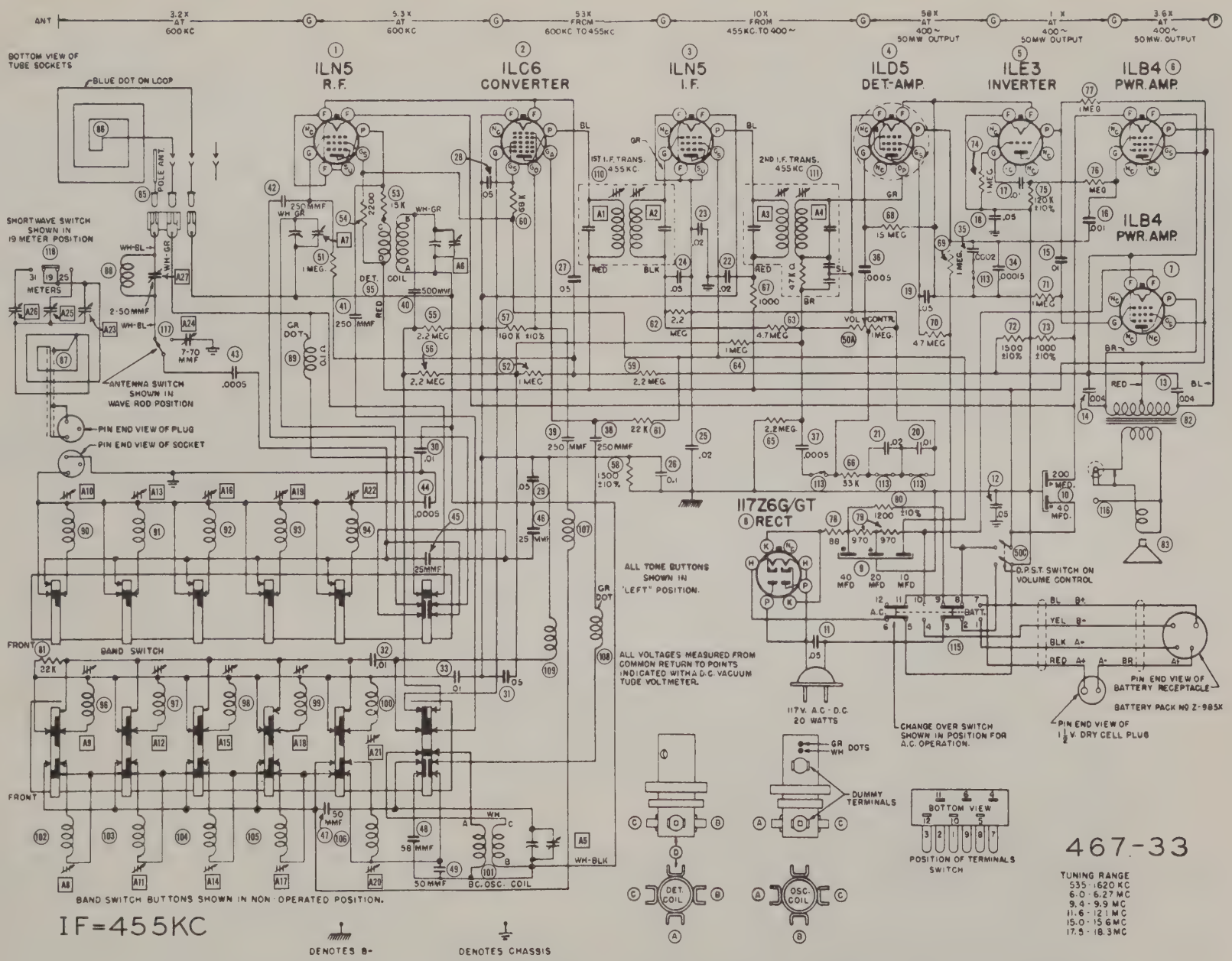
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE

DISASSEMBLY INSTRUCTIONS

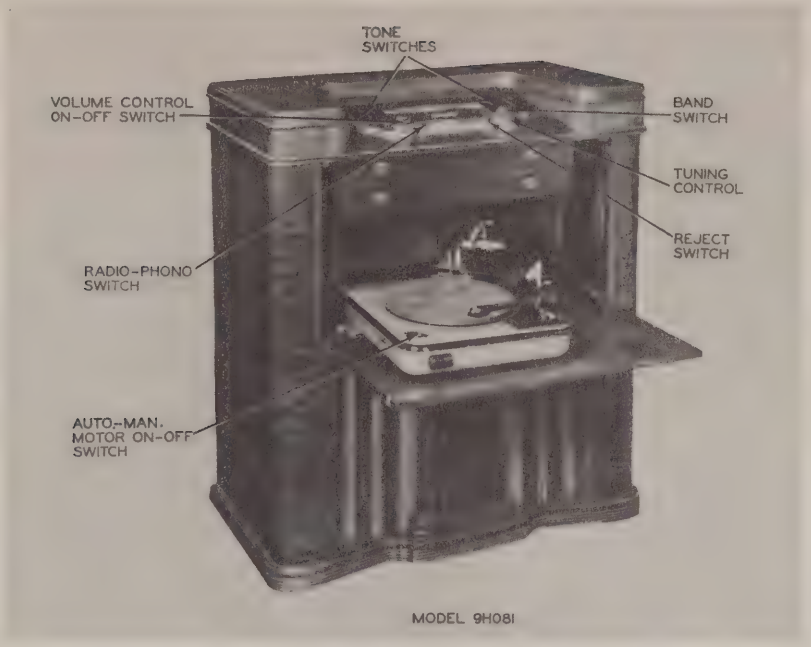
1. Remove volume and tuning push-on type knobs.
2. Disconnect battery leads, remove batteries.
3. Remove two screws and washers from bottom of chassis board.
4. Disconnect telescopic antenna plug-in lead from connection on band switch.
5. Disconnect the longer of the two loop antenna leads from the connection on the band switch.
6. Disconnect the remaining antenna loop lead from the connection on the trimmer condenser.
7. Remove chassis.


ANT
3.2 X AT 600 KC
5.3 X AT 600 KC
53 X FROM 600 KC TO 455 KC
10 X FROM 455 KC. TO 400 ~
58 X AT 400 ~ 50 MW OUTPUT
1 X AT 400 ~ 50 MW OUTPUT
3.6 X AT 400 ~ 50 MW. OUTPUT
1LN5 R.F.
1LC6 CONVERTER
1LN5 I.F.
1LD5 DET.-AMP.
1LE3 INVERTER
1LB4 PWR. AMP.
1LB4 PWR. AMP.
BOTTOM VIEW OF TUBE SOCKETS
BLUE DOT ON LOOP
POLE ANT.
SHORTWAVE SWITCH SHOWN IN 19 METER POSITION
METERS
ANTENNA SWITCH SHOWN IN WAVE ROD POSITION
PIN END VIEW OF PLUG
PIN END VIEW OF SOCKET
BAND SWITCH
FRONT
FRONT
BAND SWITCH BUTTONS SHOWN IN NON-OPERATED POSITION.
IF=455KC
1ST I.F. TRANS. 455 KC.
2ND I.F. TRANS. 455 KC
DET. COIL
OSC. COIL
ALL TONE BUTTONS SHOWN IN "LEFT" POSITION.
ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH A D.C. VACUUM TUBE VOLTMETER.
VOL. CONTROL
117Z6G/GT RECT
D.P.S.T. SWITCH ON VOLUME CONTROL
117 V. A.C.-D.C. 20 WATTS
CHANGE OVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION.
PIN END VIEW OF BATTERY RECEPTACLE
BATTERY PACK NO Z-985X
PIN END VIEW OF 1½ V. DRY CELL PLUG
DUMMY TERMINALS
BOTTOM VIEW
POSITION OF TERMINALS SWITCH
DET. COIL
OSC. COIL
DENOTES B-
DENOTES CHASSIS
467-33
TUNING RANGE
535 - 1620 KC
6.0 - 6.27 MC
9.4 - 9.9 MC
11.6 - 12.1 MC
15.0 - 15.6 MC
17.5 - 18.3 MC

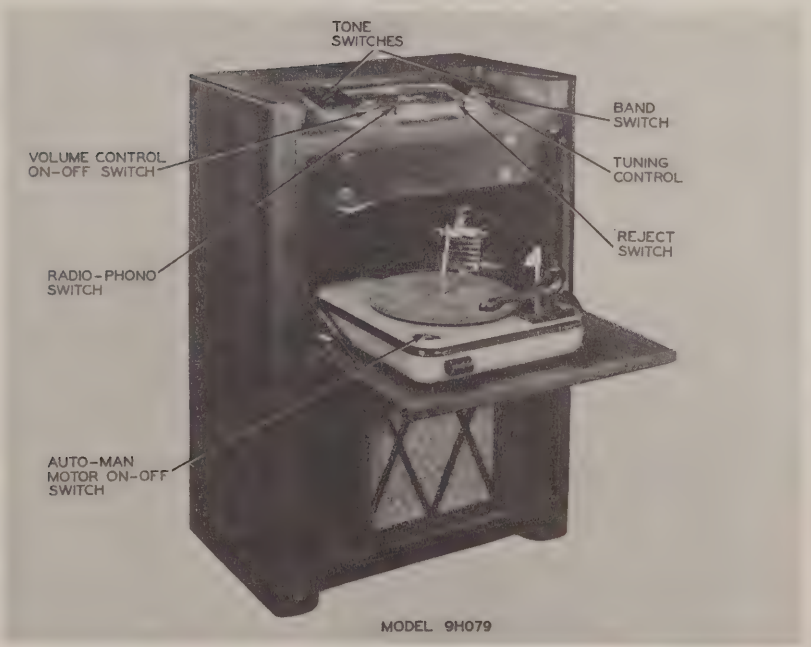
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

ZENITH
MODELS 9H079, 9H079E, 9H079R, 9H081, 9H082R, 9H085R, 9H088R

ZENITH
MODELS 9H079, 9H079E, 9H079R, 9H081, 9H082R, 9H085R, 9H088R



MODEL 9H081



MODEL 9H079

ZENITH
MODELS 9H079, 9H079E, 9H079R, 9H081, 9H082R, 9H085R, 9H088R

ZENITH MODEL 9H081

TRADE NAME	Zenith Models 9H079, 9H079E, 9H079R, 9H081, 9H082R, 9H085R, 9H088R(Chassis No.8C21)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Radio, Automatic Phonograph Combination for Standard Broadcast and FM Bands.
TUBES(NINE)	Types, 6AG5 RF Amp., 6SB7 Converter, 6SG7GT 1st IF Amp., 6SH7 2nd IF Amp., 6SH7 Limiter, 6S8GT Disc.-Det.-AVC-AF, 7F7 Phono. Osc.-Amp., 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-125 Volts AC RATING .645A @ 117V AC
TUNING RANGE	Broadcast - 535-1620KC F. M. Bands - 42-48.5MC, 88-108MC

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1946 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6AG5	6AG5	7BD	
2	Converter	6SB7	6SB7	8R	
3	1st IF Amp.	6SG7GT	6SG7GT	8BK	
4	2nd IF Amp.	6SH7	6SH7	8BK	
5	Limiter	6SH7	6SH7	8BK	
6	Disc:Det.-AVC-AF	6S8GT	6S8GT		
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	
9	Phono. Osc. Amp.	7F7	7F7	8AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	40	450	22-1382	FP346	DY-2x40-450/40-25	EL-240	AF4444J	UP9BJ39	▲ Filter
B	40	450							■ "
C	40	25				TA-50	PRS25-50	BR502	▲ Cath. Bypass
11	30	300	22-1449	FP135	DY-30-350	EL-33	AF6J	UP4AJ29	7F7 Plate Decoupling
12	.005	400	22-1041	TP408	S-6-005	TC-25	484-005	DT6D5	Line Bypass
13	.003	600	22-288	TP406	S-6-003	TC-23	684-003	DT6D3	Tone Compensation
14	.003	600	22-288	TP406	S-6-003	TC-23	684-003	DT6D3	" "
15	.005	600	22-1135	TP408	S-6-005	TC-25	684-005	DT6D5	" "
16	.004	600	22-448	TP407	S-6-004	TC-24	684-004	DT6D4	" "
17	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Cath. Bypass
18	.004	600	22-448	TP407	S-6-004	TC-24	684-004	DT6D4	6K6 Plate Bypass
19	.02	600	22-830	TP412	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
20	.002	600	22-1445	TP405	S-6-002	TC-22	684-002	DT6D2	" "
21	.02	600	22-830	TP412	S-6-02	TC-12	684-02	DT6S2	" "
22	.02	600	22-830	TP412	S-6-02	TC-12	684-02	DT6S2	Limiter Plate Decoup.
23	.02	600	22-830	TP412	S-6-02	TC-12	684-02	DT6S2	Limiter Screen Bypass
24	.01	600	22-196	TP411	S-6-01	TC-11	684-01	DT6S1	2nd IF Plate Decoup.
25	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	2nd IF Cath. Bypass
26	.001	600	22-1431	TP404	S-6-001	TC-21	684-001	DT6D1	2nd IF Screen Bypass
27	.01	600	22-196	TP410	S-6-01	TC-11	684-01	DT6S1	1st IF Plate Decoup.
28	.001	600	22-1431	TP404	S-6-001	TC-21	684-001	DT6D1	1st IF Screen Bypass
29	.01	200	22-1385	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Fil. Bypass
30	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
31	.01	600	22-196	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Plate Decoup.
32	.001	600	22-1431	TP404	S-6-001	TC-21	684-001	DT6D1	RF Bypass Pwr. Supp.
33	.002	600	22-1445	TP405	S-6-002	TC-22	684-002	DT6D2	Wave Trap DC Blocking
34	.002	600	22-1220	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
35	.02	200	22-327	TP423	S-4-02	TC-12	484-02	DT4S2	Osc. Grid Capacitor
36	100	600	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM Ant.
37	150	600	22-1137	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Tone Compensation
38	500	600	22-1138	MC245	MO.5-35	1FM-35	1465-0005	5W5T5	Audio Plate Bypass
39	500	600	22-1138	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Phono Bypass
40	50	500	22-1367	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Limiter Grid Coupling
41	150	600	22-470	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	RF Bypass Diode Load
42	475		22-87	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Conv. Fil. Bypass
43	475		22-87	MC245	MO.5-35	1FM-315	1468-0005	5W5T5	Conv. Screen Bypass
44	50	500	22-1367	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
45	50	500	22-1492						Fixed Trimmer
46	18		22-1490						Fixed Trimmer
47	250	500	22-182	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
48	10		22-1489	MC215	MO.5-41	MS-41	1468-00001	5W5Q1	RF Coupling
49	100	600	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Plate Decoupling
50	100	300	22-1488	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AVC Filter
51	20		22-1491						Fixed Trimmer
52	475		22-87	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	RF Screen Bypass
53	100	600	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Bypass
54	50	500	22-1532	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Feedback
55	50	500	22-1532	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Feedback

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
56A	2.5 Meg	1	63-1466	DTM296	D13-139XX		Volume Control
B	Shaft		Not Req.	S525	E		Attach to 56A per instructions
C	Switch		" "	M26	41		" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
57	100KΩ	½	63-160	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
58	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. AVC Network
59	6800Ω	½	63-639	BTS-6800	Blue-Gray-Red RF Plate Filter
60	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. Converter Grid
61	33KΩ	½	63-712	BTS-33K	Or.-Or.-Or. Osc. Grid
62	22KΩ	2	63-1058	BT-2-22K	Red-Red-Or. Converter Screen Dropping
63	2200Ω	½	63-803	BTS-2200	Red-Red-Red Converter Plate Filter
64	2.2 Meg.	½	63-722	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
65	68KΩ	½	63-1225	BTS-68K	Blue-Gray-Or. 1st IF Screen Dropping
66	2200Ω	½	63-803	BTS-2200	Red-Red-Red 1st IF Plate Filter
67	68KΩ	½	63-1225	BTS-68K	Blue-Gray-Or. 2nd IF Screen Dropping
68	150Ω	½	63-246	BW-½-150	Br.-Grn.-Br. 2nd IF Cathode
69	2200Ω	½	63-803	BTS-2200	Red-Red-Red 2nd IF Plate Filter
70	47KΩ	½	63-593	BTS-47K	Yl.-Vi.-Or. IF Filter
71	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Diode Load
72	100KΩ	½	63-160	BTS-100K	Br.-Blk.-Yl. Limiter Plate Filter
73	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. Limiter Screen Dropping
74	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. Limiter Screen Bleeder
75	47KΩ	½	63-593	BTS-47K	Yl.-Vi.-Or. Limiter Grid
76	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. Deemphasis
77	100KΩ	½	63-595	BTS-100K	Br.-Blk.-Yl. Discriminator Load
78	100KΩ	½	63-595	BTS-100K	Br.-Blk.-Yl. Discriminator Load
79	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
80	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. 1st AF Plate Load
81	47KΩ	½	63-767	BTS-47K	Yl.-Vi.-Or. Tone Compensation
82	47KΩ	½	63-648	BTS-47K	Yl.-Vi.-Or. Tone Compensation
83	470Ω	1	63-1222	BTA-470	Yl.-Vi.-Br. Bias
84	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Output Grid
85	100Ω	½	63-1172	BW-½-100	Br.-Blk.-Br. Output Screen Dropping
86	33Ω	½	63-1099	BW-½-33	Or.-Or.-Blk. Bias
87	47KΩ	½	63-767	BTS-47K	Yl.-Vi.-Or. Tone Compensation
88	33KΩ	½	63-712	BTS-33K	Or.-Or.-Or. Pre. Amp. Plate Filter
89	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Pre. Amp. Plate Load
90	5600Ω	½		BTS-5600	Grn.-Blue-Red Pre. Amp. Plate Filter
91	47KΩ	½	63-767	BTS-47K	Yl.-Vi.-Or. Pre. Amp. Plate Load
92	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue Pre. Amp. Grid
93	1 Meg.	½	63-441	BTS-1 Meg.	Br.-Blk.-Grn. Pre. Amp. Grid Leak

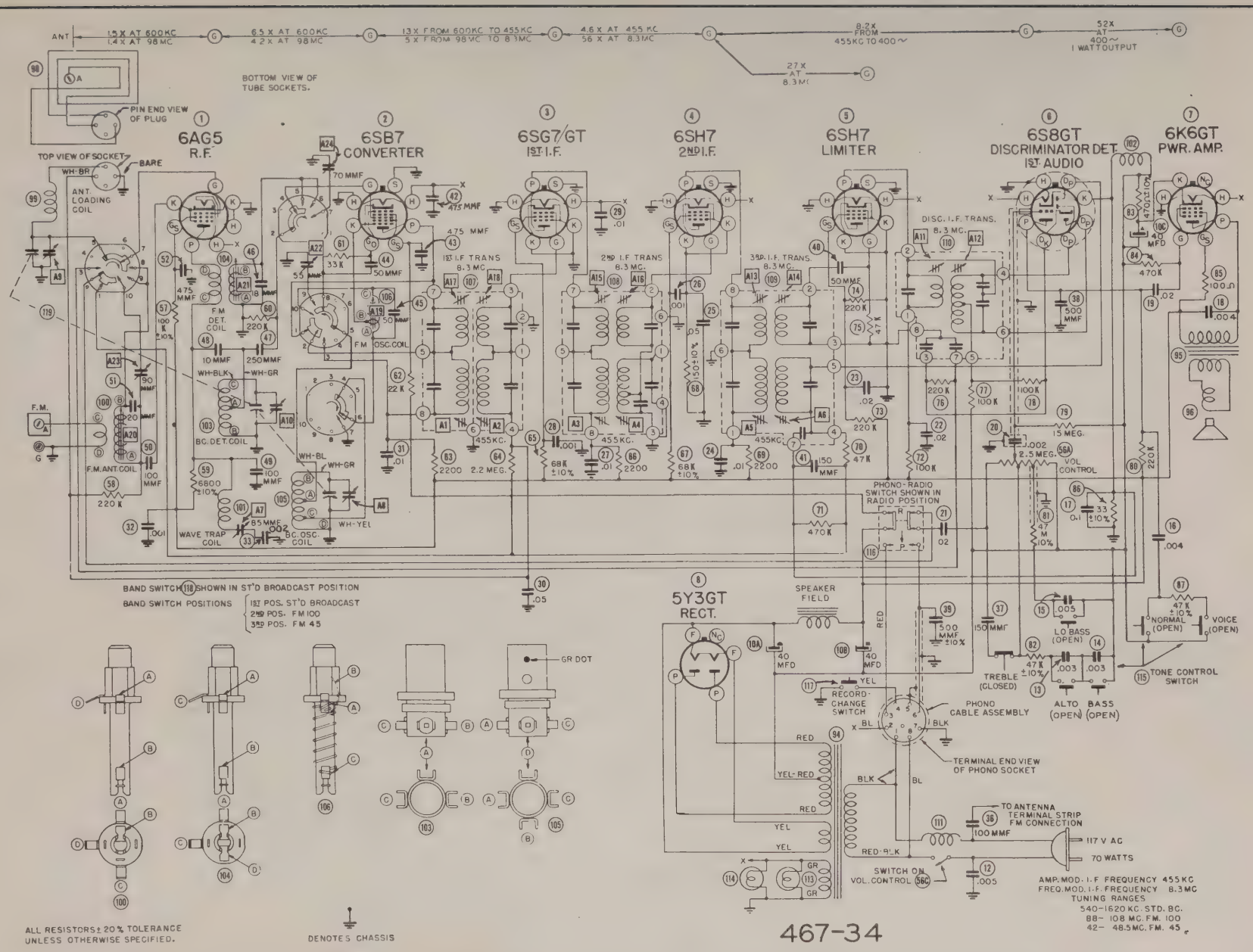
TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
94	117VAC @ .645A	660VAC @ .070A	5.1VAC @ 1.88A	6.4VAC @ 2.5A	95-922	P-4078†	T-13R36	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
95A	5300Ω	3.8Ω	330Ω	.75Ω	Part of 49-537	A-3310	T-22S46#		Used in model 9H081 and 9H085R
B	6500Ω	3.5Ω	520Ω	.32Ω	Part of 49-534	A-3878	T-22S46#		Used in model 9H079
C					Part of 49-550				Used in model 9H088R
D					Part of 49-555				Used in model 9H082R

#Drill one new mounting hole.



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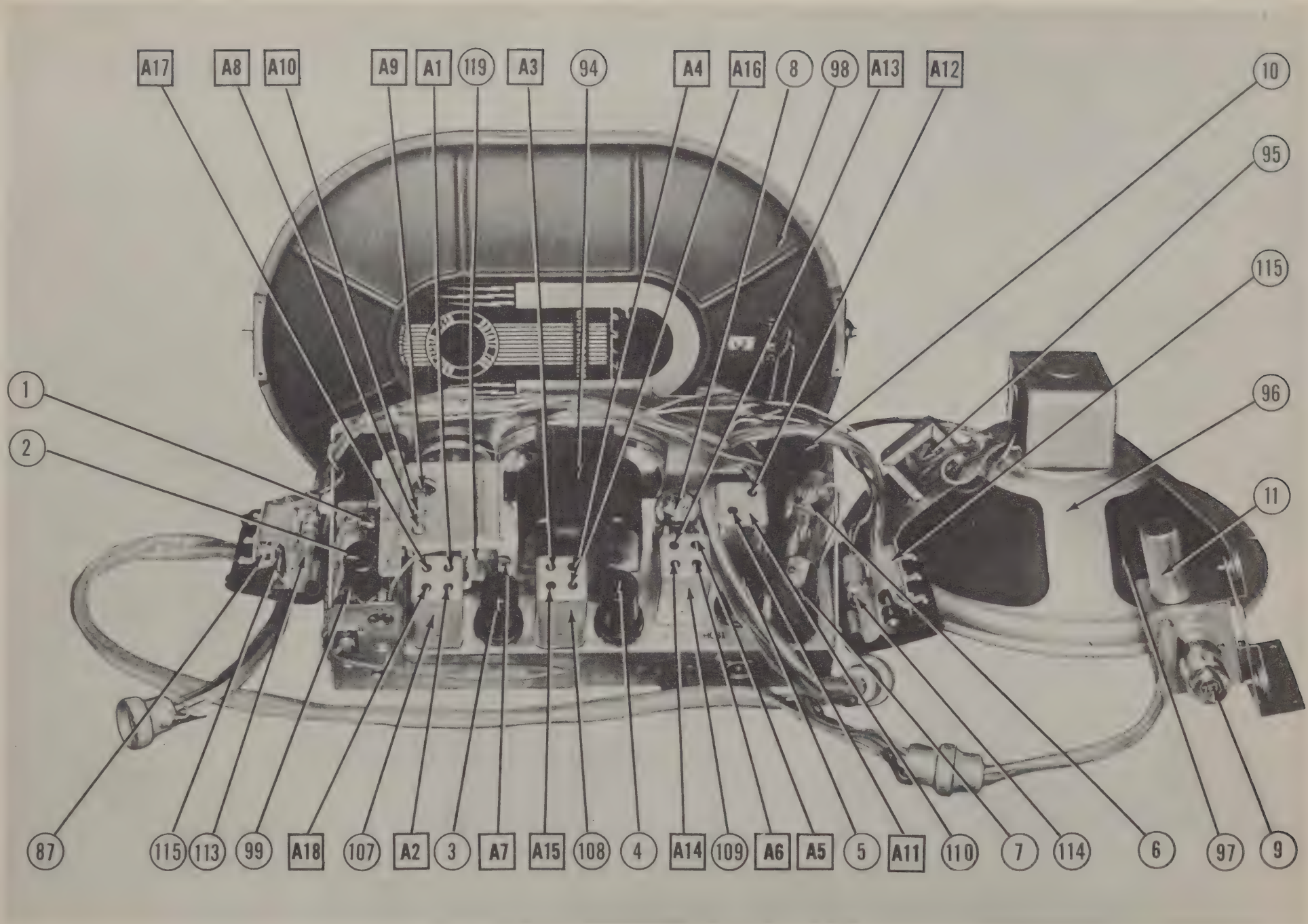
A17
A8
A10
A9
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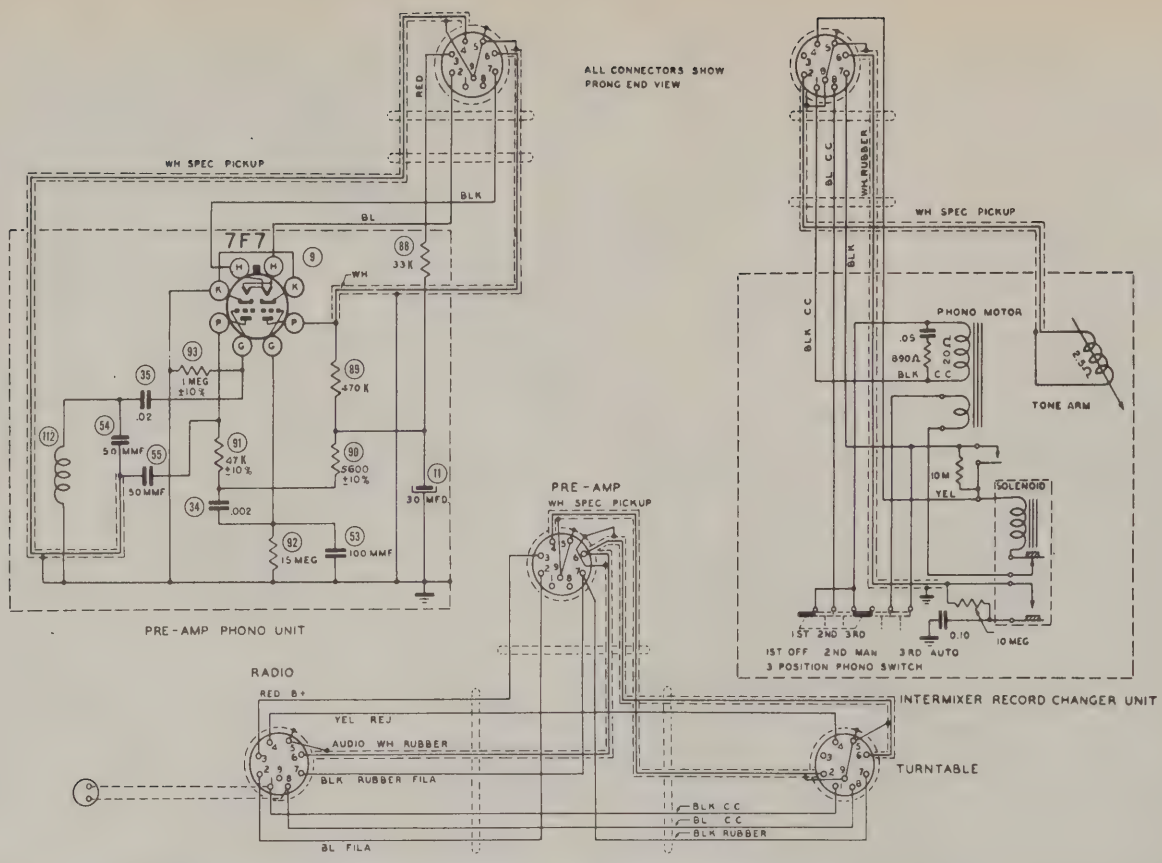
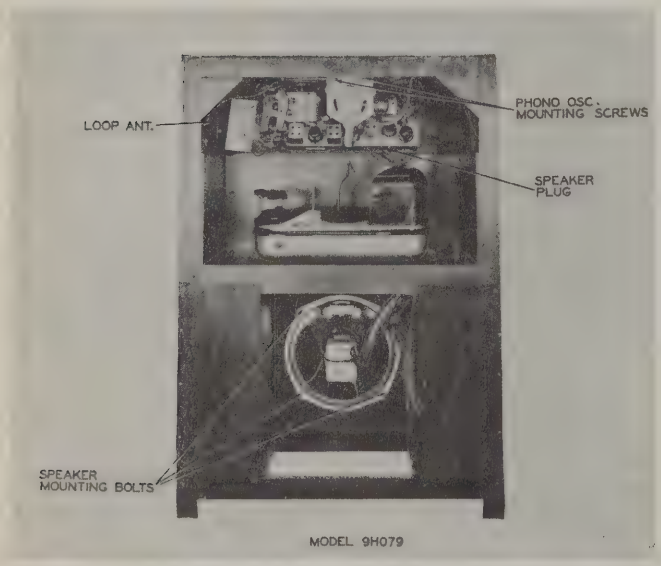
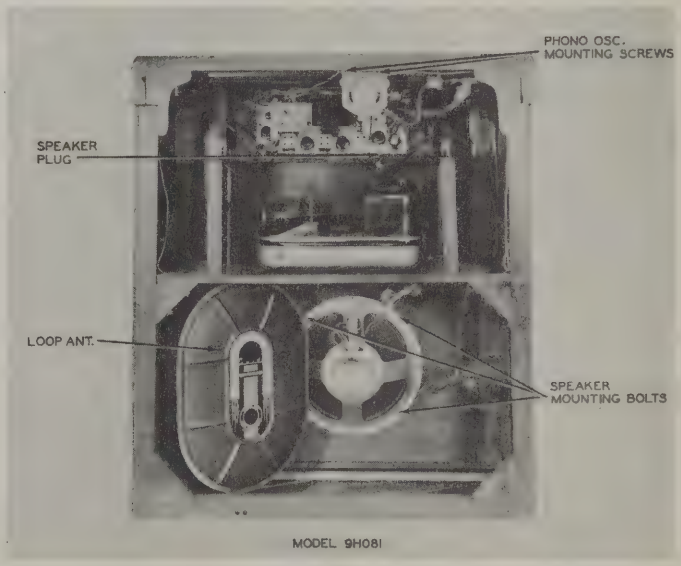




MODEL 9H079



MODEL 9H081

PUSH BUTTON ADJUSTMENTS

1. Remove the volume control push-on type knob, the standard broadcast-FM control knob and the tuning control knob.
2. Unclip the two tone control push button units from dial.
3. Disconnect loop antenna plug from chassis.
4. Disconnect speaker plug from back of chassis.
5. Disconnect FM antenna and ground lead from lock bolts on left hand side, back of chassis.
6. Disconnect the phono-oscillator plug.
7. Disconnect phono receptacle cable.
8. Remove four chassis board plugs.
9. Remove four hex head screws and washers from chassis board. Remove chassis.
10. Remove four nuts from speaker. Remove speaker.
11. Loosen two bolts from bottom bracket of loop antenna. Remove loop antenna.
12. Remove three wood screws holding phono-oscillator to cabinet.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-470‡		Used in models 9H081 and 9H085R
96A	820Ω	3.8Ω	49-537	Mod. G12-RS		‡Shunt field with 1250Ω resistor
B	600Ω	3.5Ω	49-534	ST-441*		Used in model 9H079R
				Mod. G10-RS		*Shunt field with 2500Ω resistor
C			49-550			Used in model 9H088R
D			49-555			Used in model 9H082R
	CONE DIA.	VC DIA.				
97A	11½"	1"				
B	9-3/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
98	Loop Ant.	.5Ω	1Ω	S11461		
99	Ant. Load	.2Ω		S12389		
100	FM Ant. Coil	0Ω	0Ω	S12257		
101	Wave Trap	50Ω		S12253		
102	RF Choke	.3Ω		S12256		AC Line
103	BC Det.Coil	5Ω	13Ω	S11156		
104	FM Det.Coil	0Ω	0Ω	S12258		
105	BC Osc.Coil	.5Ω	10Ω	S11291		
106	FM Osc.Coil	0Ω	0Ω	S12259		
107A	Input IF	9Ω	9Ω	S12249		455KC items 107A, 107B in same can
107B	Input IF	.6Ω	.6Ω	S12249		8.3MC
108A	InterstageIF	9Ω	8Ω	S12250		455KC items 108A, 108B in same can.
108B	InterstageIF	.6Ω	.6Ω	S12250		8.3MC
109A	Output IF	9Ω	9Ω	S12251		455KC items 109A, 109B in same can
109B	Output IF	.6Ω	.6Ω	S12251		8.3MC
110	Disc. IF	1.2Ω	1.6Ω	S12252		
111	RF Choke	.3Ω		S12256		Disc. Cathode
112	Phono. Osc.	1.7Ω				

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.		INSTALLATION NOTES
113	bayonet	6-8	.25	Blue	100-36		Type 44
114	"	6-8	.25	"	100-36		" "

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
115	Switch Assby.	S-12510	Tone
116	Switch	85-363	Phono.-Radio
117	"	85-349	Record Change
118	Band Switch	85-378	
119	Tuning Cap.	22-1368	3 Gang Variable Cap.
A22	Trimmer Cap.	22-1571	Osc. Adj. 45MC FM (55MMF)
A23	" "	22-1485	FM Ant. Adjustment
A24	" "	22-1486	RF Adj. 45MC FM (70MMF)
	Phono. Cable	S-12265	

NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN "STANDARD BROADCAST POSITION. TONE CONTROL IN TREBLE POSITION.

VOLTAGE READINGS

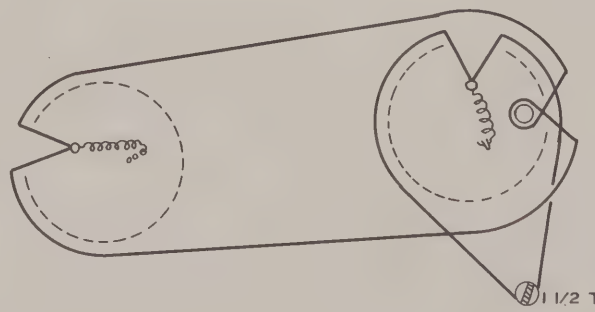
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AG5	-5V.DC	0V.	0V.	6.2V.AC	233V.DC	117V.DC	0V.		
2	6SB7Y	0V.	6.2V.AC	275V.DC	85V.DC	-2V.DC	0V.	0V.	-1V.DC	
3	6SG7GT	0V.	6.2V.AC	0V.	-5V.DC	0V.	120V.DC	0V.	265V.DC	
4	6SH7	0V.	6.2V.AC	1.3V.DC	0V.	1.3V.DC	130V.DC	0V.	265V.DC	
5	6SH7	0V.	6.2V.AC	0V.	-3V.DC	0V.	54V.DC	0V.	105V.DC	
6	6S8GT	-1.6V.DC	-1.4V.DC	-1.6V.DC	-1.6V.DC	-3V.DC	125V.DC	6.2V.AC	0V.	-1.6V.DC
7	6K6GT	0V.	6.2V.DC	270V.DC	285V.DC	-1V.DC	-1.4V.DC	0V.	16V.DC	
8	5Y3GT	0V.	335V.DC	285V.DC	330V.AC	0V.	330V.AC	285V.DC	335V.DC	
9	7F7	6.2V.AC	0V.	62V.DC	-5V.DC	-4V.DC	117V.DC	0V.	0V.	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AG5	2.7MEG	0Ω	0Ω	.1Ω	97KΩ	190KΩ	0Ω		
2	6SB7Y	0Ω	.1Ω	92KΩ	112KΩ	36KΩ	.3Ω	0Ω	215KΩ	
3	6SG7GT	0Ω	.1Ω	0Ω	2.7MEG	0Ω	158KΩ	0Ω	92KΩ	
4	6SH7	0Ω	.1Ω	140Ω	1Ω	140Ω	158KΩ	0Ω	92KΩ	
5	6SH7	0Ω	.1Ω	0Ω	47KΩ	0Ω	310KΩ	0Ω	190KΩ	
6	6S8GT	560KΩ	28Ω	100KΩ	100KΩ	185KΩ	310KΩ	.1Ω	0Ω	15MEG
7	6K6GT	0Ω	.1Ω	90KΩ	90KΩ	460KΩ	28Ω	0Ω	450Ω	
8	5Y3GT	INF	90KΩ	90KΩ	152Ω	INF	142Ω	90KΩ	90KΩ	
9	7F7	.1Ω	0Ω	580KΩ	15MEG	1MEG	170KΩ	0Ω	0Ω	

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE

ALIGNMENT INSTRUCTIONS .

When aligning the FM bands a VTVM (vacuum tube voltmeter) with a 200KΩ resistor in series with the hot lead (shielded) should be used. Set volume control at maximum volume. For AM alignment keep signal generator output no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. When aligning the AM and FM IF's do not press hard on the alignment tool or threads in coil forms will strip making them impossible to adjust. When adjusting A15, A16, A17 and A18 considerable signal will be necessary and it will tune broadly. If signal generator does not have sufficient output, load resistance may be increased over 300Ω. After adjusting cores on FM tuning unit, use drop of speaker cement to hold cores in place.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to pin #8 of 6SB7 (converter). Low side to chassis.	455KC Modulated	BC	600KC	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output
"	High side to pin #1 of 6AG5 (RF). Low side to chassis.	"	"	"	"	A7	" " minimum "
	Loop (2 turns of wire loosely coupled to wave-magnet).	1600KC Modulated	"	1600KC	"	A8	" " maximum "
	"	1400KC Modulated	"	1400KC	"	A9,A10	" " " "
.05 MFD.	High side to pin #4 (grid) on 6SH7 limiter. Low side to chassis.	8.3MC Unmodulated	FM45		VTVM from pin #5 on disc. trans. to chassis	A11	" " " "
"	"	"	"		VTVM from pin #7 on disc. trans. to chassis	A12	Adjust for zero reading. Use sufficient signal to get positive and negative reading before zero setting.
"	High side to pin #4 (grid) of 6SH7 2nd IF. Low side to chassis.	"	"		VTVM from pin #4 on 6SH7 (limiter) to chassis.	A13,A14	Adjust for maximum reading
"	High side to pin #4 (grid) on 6SG7 1st IF. Low side to chassis.	"	"		"	A15,A16	Connect 300 ohm ½ watt carbon resistor across secondary of 2nd IF trans. Keep leads as short as possible and solder. Adjust for maximum reading.
"	High side to pin #8 (grid) on 6SB7 Low side to chassis.	"	"		"	A17,A18	Adjust for maximum reading and remove resistor (300 ohms) before proceeding with next operation.
270Ω res.	High side to ant. post (remove line ant.) Low side to chassis.	98MC Unmodulated	FM100	98MC	"	A19	Adjust for maximum reading
"	"	"	"	"	"	A20,A21	" " " "
"	"	45MC Unmodulated	FM45	45MC	"	A22	" " " "
"	"	"	"	"	"	A23,A24	" " " "

AUTOMATIC AVIONICS TEST EQUIPMENT **NEWSLETTER**

Automatic Avionics Test Equipment has a wide variety of applications and therefore comes in all sizes and shapes.

Figure 1 is an automatic tape-controlled table top tester designed to test only the programmer on an aircraft automatic weapons release system. The tester does 117 different tests in 70 seconds. Since it tests only one black box it is called peculiar test equipment (PTE).

On the other end of the spectrum is the AN/GSM-133 (Figure 2) Central Controller which is also tape-controlled. The unit is designed to control interface test stands for such systems as Automatic Flight Control, Central Air Data Computers, Flight Directors, VHF/UHF Transceivers, Missile Avionics and Radars. This unit quite naturally is in the general or standard test equipment class.

The latest in the state-of-the-art and with greatly increased flexibility is the Bendix Model 200 designed for the commercial airlines (Figure 3). This unit is computer controlled and is general purpose in design. It also provides its own tape preparation facility. The Model 200 will test in an automatic, semi-automatic, or manual mode. The first 200, which will be delivered to Continental Airlines, will test the Bendix PB-20 including CAT II boxes, the Sperry SP-50 with CAT II and the Sperry and Honeywell CADC's used on the 727. It has growth capability for flight directors, 747 and Concorde AFCS, and with additional hardware, RF systems. To summarize, automatic testers may be small tape-controlled one system testers, tape controlled programmer/comparators for general avionics testing, and computer controlled, general avionics test complexes.

What is Automatic Testing and Why Do We Use It?

The new avionic units being supplied with forthcoming aircraft are more complex in nature and require many more individual tests than we have seen in the past. In addition, operations such as CAT II and CAT III themselves will add sizeable quantities of extra steps to Line Replaceable Unit test procedures.

BENDIX SUPPORT EQUIPMENT

Bendix Navigation & Control Division

Teterboro, New Jersey 07608

This very sizeable increase in tests will bring with it a corresponding increase in the time consuming, boring, detailed tasks associated with the use of manual test equipment; namely, reading a test procedure, moving switches, turning knobs, pushing buttons, reading meters, looking up the acceptable limits, and recording test results.

Automatic test equipment accomplishes the following functions:

Selects and connects stimuli to be applied

Selects and connects measurement device to be used

Selects and connects test point to be evaluated

Selects and connects required loads

Selects measurement limits and inserts them into comparison registers

Introduces time delays

Executes test

Displays and prints out result

Experience indicates that accomplishing these functions automatically is much faster than doing it manually. This will permit LRU test times to stay within acceptable limits during the period ahead. In addition, by performing these detailed test steps, the automatic test set relieves the technician of much menial and boring work and permits him to spend his time on a much more important function; namely, using his knowledge of the item under test to supervise and command the test routine and make final decisions concerning the corrective action required.

In order for the test station to be able to perform the intricate tests it needs, in addition to the normal power supplies and measurement devices needed in manual testing, such things as a tape reader, line printer, stimuli control relays, test point select matrixes, logic racks, analog to digital and digital to analog converters.

Automatic Test Set Operation

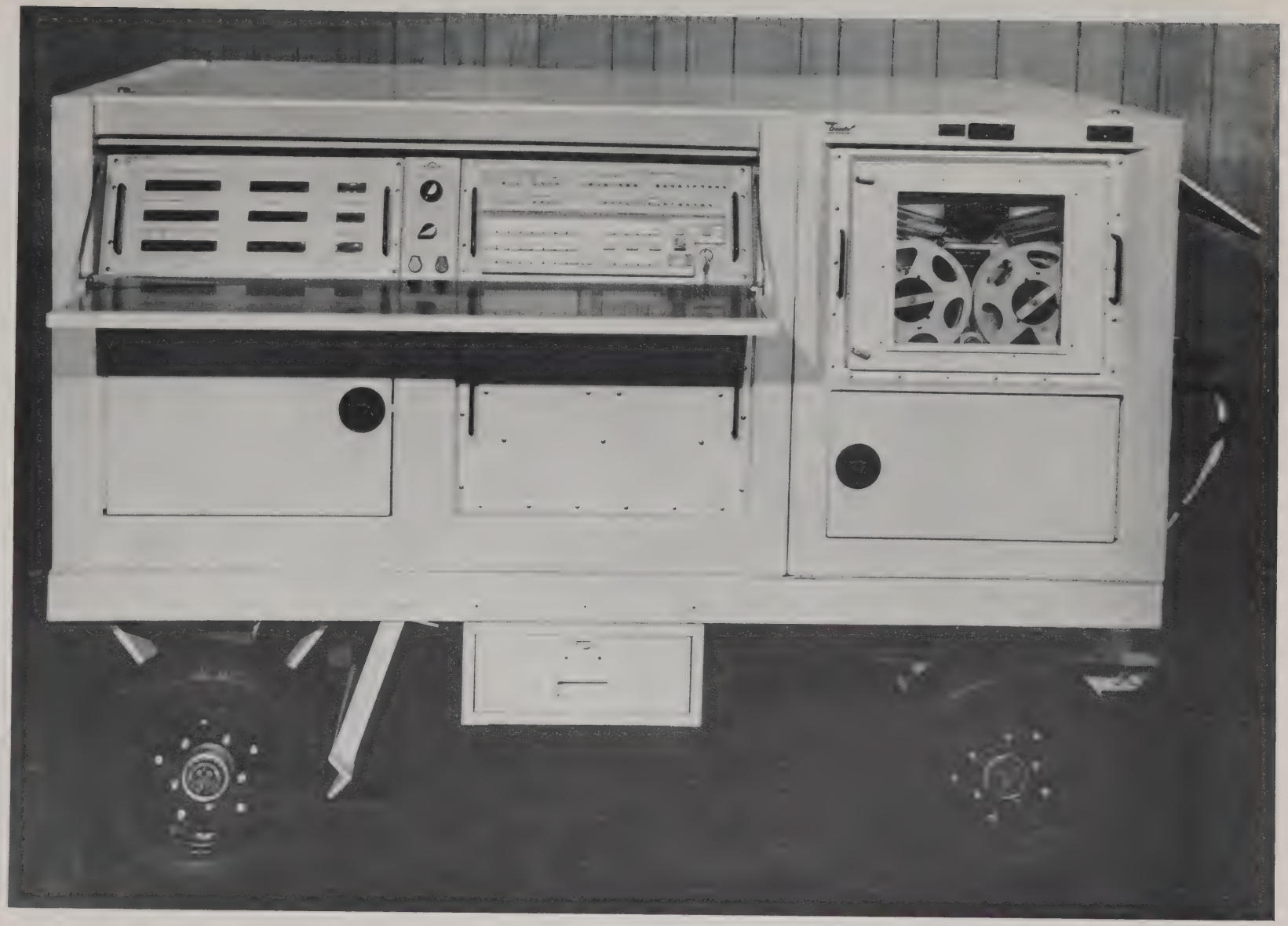
To perform a test on a "black box" using the Model 200, the technician must connect the unit to the test station with a cable designed for that particular unit and must also load the tape reader with the programmed tape for the unit to be tested. The technician then starts the test and the tester will automatically perform all the tests on the functional test tape. The test station will stop after completion of the required tests. A printer or typewriter will record all the values obtained for each test and will also indicate whether or not the unit passed or failed each test. This record is permanent and may be filed for future reference.

Automatic testers normally provide several options as to the course of action to be taken by the test station upon encountering a failure. The test station may stop at that particular test or it may go into a sub-routine test to isolate the cause of the malfunction or it may continue to the end of the test program with the printed record indicating the test that the unit failed. Normally the test programs are so designed that the tester will indicate either a faulty module when testing "black boxes" or a faulty component when testing modules or cards.

A manual control panel permits the technician to select an alternate test if desired, to proceed on a test by test basis, to repeat a given test, or to stop the operation with everything connected to permit probe readings or adjustments.

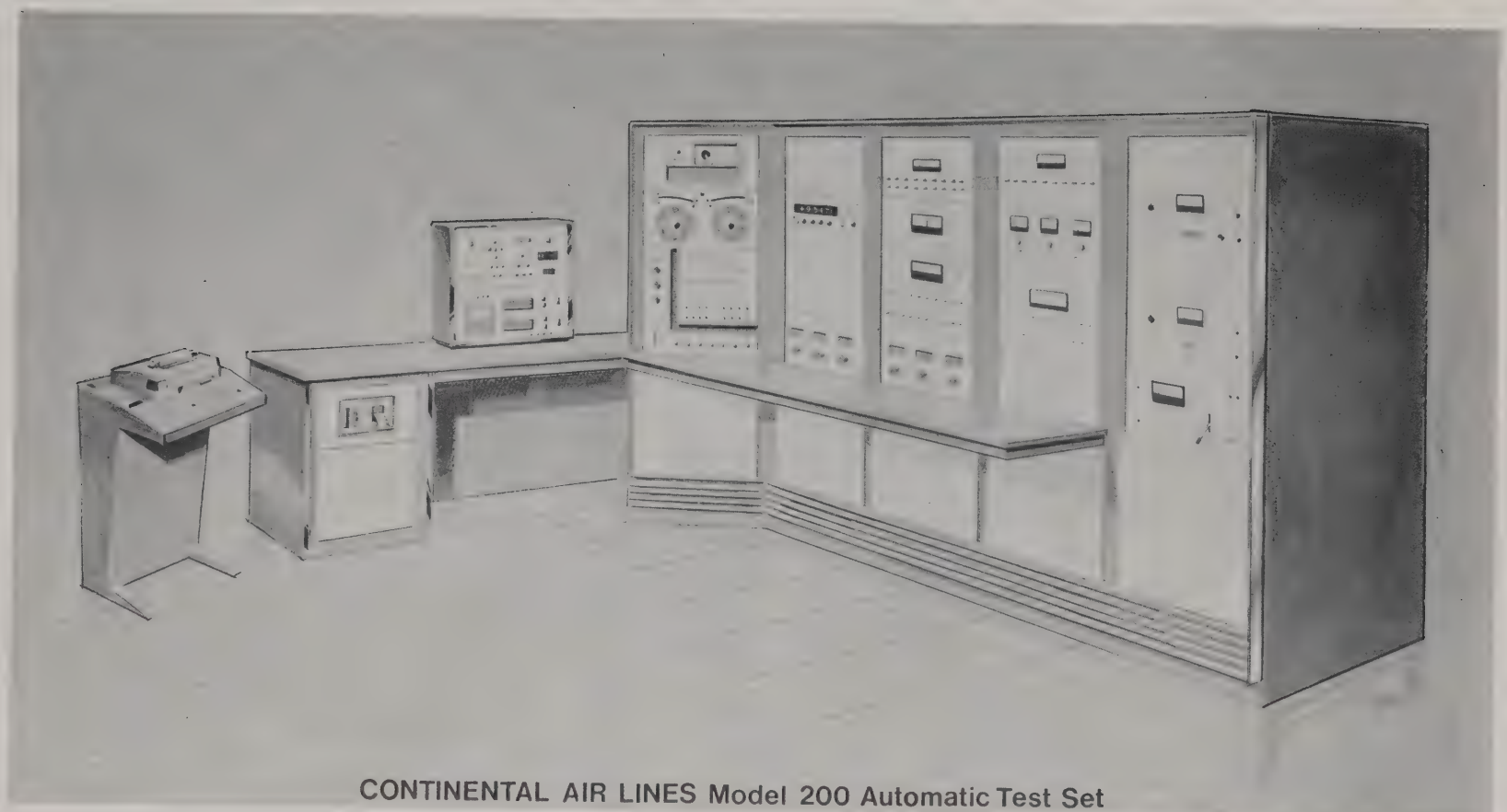
TEST SET, PROGRAMMER, WEAPONS RELEASE (AWE-1)

(Figure 1)



AN/GSM-133 PROGRAMMER COMPARATOR

(Figure 2)



CONTINENTAL AIR LINES Model 200 Automatic Test Set

(Figure 3)

THE ASTATIC CORPORATION

KNOWN THE WORLD OVER

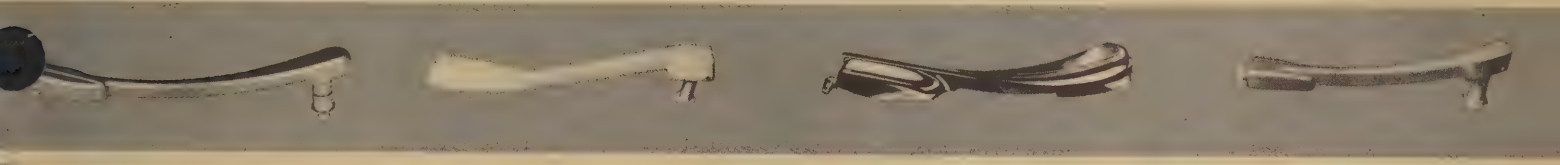
CONNEAUT OHIO

GENERAL CATALOG NO. 33-3

CARTRIDGES

MICROPHONES

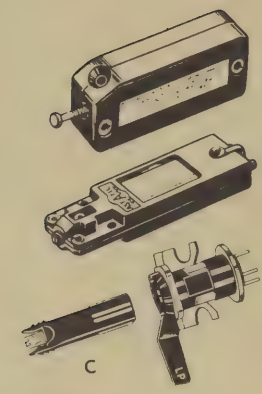
PICKUPS



NEEDLES

ASTATIC CORPORATION • CONNEAUT, OHIO

"Known the World Over"



PICKUP CARTRIDGES

NEW STOCK NUMBER		OLD STOCK NUMBER	FIG.	LIST PRICE	ASTATIC NEEDLE RECOMM.	ELEMENT TYPE	VOLTS OUTPUT	NEEDLE PRESSURE	FREQ. RANGE	SPEED R.P.M.
2	(3)	B-2	A	$ 9.00	N4-3*	Crystal	2.5	2¾ oz.	50-4000	78
4	(2)	L-26A	B	4.45	N4-3*	Crystal	1.4	2¾ oz.	50-4500	78
6	(3)	L-40A	B	4.45	N4-3*	Crystal	0.6	1¼ oz.	50-4500	78
11T7	(1)	Stereo	C	6.95	11T7, 2 (.7mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +LP
11T7B	(1)	Stereo	C&C1	7.95	11T7, 2 (.7mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +LP
12	(1)	L-12	D	4.45	N4-3*	Crystal	4.0	1 oz.	50-5000	78
12-U	(1)	L-12-U	D	4.95	N4-3*	Crystal	4.0**	1 oz.	50-5000	78
13T	(2)	Stereo	C	6.95	13T, (.7&3mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +All
13TB	(1)	Stereo	C&C1	7.95	13T, (.7&3mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +All
13TBX	(1)	Stereo	C&C1	16.50	13TX, (.7X&3mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +All
13TX	(2)	Stereo	C	15.50	13TX, (.7X&3mil)	Ceramic	0.5	5 gr.	20-15000	Stereo +All
16	(1)	16-L3	E	3.95	N4-2*	Crystal	3.5	10 gr.	50-5000	All
18		Avail. Nov.	F	3.25	N6-2*	Crystal	3.0	10 gr.	50-5000	All
22	(1)	L-29	E	3.95	N4-2*	Crystal	3.0	10 gr.	50-5000	All
24	(1)	L-70A	B	4.95	N4-3*	Crystal	1.0	1¼ oz.	50-4000	78
26	(1)	L-72A	B	4.95	N4-3*	Crystal	3.5	1¼ oz.	50-4000	78
28	(1)		H	3.95	N4-2*	Crystal	3.5	12 gr.	50-6500	All
32	(3)	L-82A	B	4.45	N4-3*	Crystal	3.5	1½ oz.	50-5000	78
34	(4)	L-92A	D	6.00	N4-3*	Crystal	2.25	1 oz.	50-7000	78
(Available until stock is depleted; replace with 32)										
36	(4)	QT-2J	I	7.95	Q-(J)	Crystal	0.85	1 oz.	50-10000	78
(Available until stock is depleted; replace with 416-2)										
40-1	(1)	AC-J	J	6.50	A-1(J)	Crystal	1.0	6 gr.	50-10000	33-1/3, 45
40-2	(1)	AC-AGJ	J1	6.50	A-AG(J)	Crystal	1.0	6 gr.	50-10000	All
40T	(1)	ACD-J	J1	6.95	A-1(J) & A-3(J)	Crystal	1.0	6 gr.	50-6000	All
(Use 312-T as economy substitute)										
40TB	(1)	ACD-2J	J2	8.45	A-1(J) & A-3(J)	Crystal	1.0	6 gr.	50-6000	All
41-2	(4)	ACC-AGJ	J	6.50	A-AG(J)	Ceramic	0.6	6 gr.	50-6000	All
(Available until stock is depleted; replace with 51-2)										
41T	(2)	ACD-CJ	J1	9.50	A-1(J) & A-3(J)	Ceramic	0.6	6 gr.	50-5000	All
41TB	(2)	ACDC-2J	J2	10.00	A-1(J) & A-3(J)	Ceramic	0.6	6 gr.	50-5000	All
42-1	(4)	AC-RJ	J	8.90	A-1(J)	Crystal	1.0	6 gr.	50-10000	33-1/3, 45
(Available until stock is depleted)										
44-1	(4)	CAC-J	K	7.50	Q-33(J)	Crystal	0.7	10 gr.	30-15000	33-1/3, 45
(Available until stock is depleted; replace with 416-2)										
44-2	(4)	CAC-AGJ	K	7.50	Q-AG(J)	Crystal	0.7	10 gr.	30-10000	All
(Available until stock is depleted; replace with 416-2)										
44-3	(4)	CAC-78J	K	7.50	Q (J)	Crystal	0.7	10 gr.	30-15000	78
(Available until stock is depleted; replace with 416-2)										
44TB	(4)	CAC-D	K1	10.50	Q-33(J)&Q-(J)	Crystal	0.7	10 gr.	30-15000	All
(Available until stock is depleted, replace with 422TS-TB)										
50-1	(4)	U-J	L	9.50	U (J)	Ceramic	0.5	5 gr.	30-10000	33-1/3, 45
50-3	(4)	U-78J	L	9.50	U-78(J)	Ceramic	0.5	5 gr.	30-10000	78
(Available until stock is depleted)										
51-1	(1)	51-1(J)	M	7.40	G (J)	Ceramic	0.7	8 gr.	30-15000	33-1/3, 45
51-2	(1)	51-2(J)	M	7.40	G-AG (J)	Ceramic	0.7	8 gr.	30-10000	All
51-3	(4)	51-3(J)	M	7.40	G-78 (J)	Ceramic	0.7	8 gr.	30-10000	All
(Available until stock is depleted, replace with 51-2)										
53-2	(2)	53-2J	M1	7.40	G-AG (J)	Ceramic	0.7	8 gr.	30-10000	All
53T	(2)	53-TJ	M2	7.95	GD-J 2 tips	Ceramic	0.7	8 gr.	30-15000	All
55T	(1)	55TJ	M3	7.95	GD-J 2 tips	Ceramic	0.7	8 gr.	30-15000	All
57T	(1)	57T(J)	M3	9.50	N-57(J) 2 tips	Ceramic	0.7	8 gr.	30-15000	All
59-2	(4)	59-2J	M	8.50	G-AG (J)	Ceramic	0.7	8 gr.	30-10000	All
60-2	(4)	LT4-AG	E	7.00	D-AG (J)	Crystal	2.0	8 gr.	50-5000	All
62-1	(1)	62-1M	N	4.95	A-1 (J)	Crystal	3.0	10 gr.	50-5000	33-1/3, 45
62T	(4)	LQD-J	O	9.50	Q-33(J)&Q-(J)	Crystal	1.0	8 gr.	50-7000	All
(Available until stock is depleted, replace with 312-T)										
62TB	(2)	LQD-1JB	O1	10.00	Q-33(J)&Q-(J)	Crystal	1.0	8 gr.	50-7000	All
62TY	(1)	LQD-1J	O2	7.95	Q-33(J)&Q-(J)	Crystal	1.0	8 gr.	50-7000	All

THE WORLD'S MOST COMPLETE LINE
OF ORIGINAL AND DIRECT REPLACEMENT CARTRIDGES

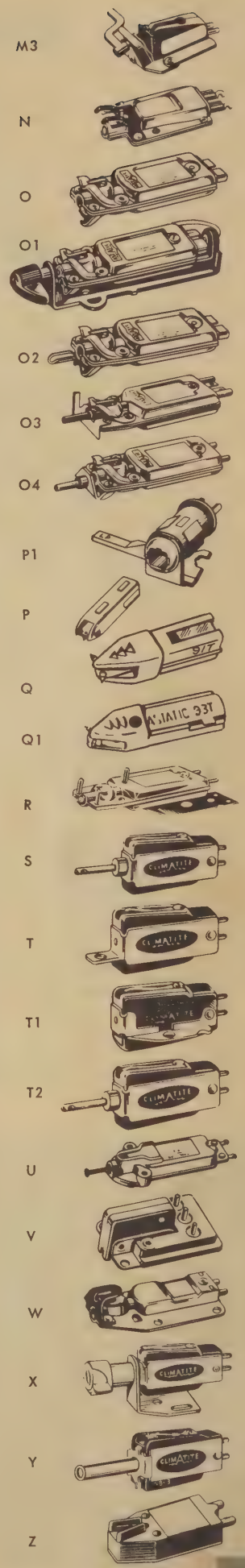
PICKUP CARTRIDGES

NEW STOCK NUMBER		OLD STOCK NUMBER	FIG.	LIST PRICE	ASTATIC NEEDLE RECOMM.	ELEMENT TYPE	VOLTS OUTPUT	NEEDLE PRESSURE	FREQ. RANGE	SPEED R.P.M.
64TS	(2)	64TMS	O3	$ 6.95	K-(J) & K-78(J)	Crystal	3.0	10 gr.	50-5000	All
66-2	(1)	66-2M	E	4.95	K-AG (J)	Crystal	3.0	10 gr.	50-5000	All
66-3	(2)	66-3M	E	4.95	K-78 (J)	Crystal	3.0	10 gr.	50-5000	78
66TB	(3)	66TMB	O1	9.00	K-(J) & K-78(J)	Crystal	3.0	10 gr.	50-5000	All
66TS	(1)	66TMS	O4	7.25	K-(J) & K-78(J)	Crystal	3.0	10 gr.	50-5000	All
66TY	(1)	66TMY	O2	6.50	K-(J) & K-78(J)	Crystal	3.0	10 gr.	50-5000	All
81T	(1)		P	3.95	81T, (1&3mil)	Ceramic	1.0	6 gr.	30-15000	All
81TB	(1)		P&P1	4.95	81T, (1&3mil)	Ceramic	1.0	6 gr.	30-15000	All
81TBX	(1)		P&P1	13.50	81TX, (1X&3mil)	Ceramic	1.0	6 gr.	30-15000	All
81TX	(1)		P	12.50	81TX, (1X&3mil)	Ceramic	1.0	6 gr.	30-15000	All
83-1	(1)	Repl. RCA	P	3.50	83-1, (one 1mil)	Ceramic	1.0	6 gr.	30-15000	33 1/3, 45
83-1X	(1)	Repl. RCA	P	12.00	83-1X, (one 1milX)	Ceramic	1.0	6 gr.	30-15000	33 1/3, 45
89T	(1)		P	4.95	89T, (1&3mil)	Ceramic	1.3	6 gr.	30-15000	All
89TB	(1)		P&P1	5.95	89T, (1&3mil)	Ceramic	1.3	6 gr.	30-15000	All
89TBX	(1)		P&P1	14.50	89TX, (1X&3mil)	Ceramic	1.3	6 gr.	30-15000	All
89TX	(1)		P	13.50	89TX, (1X&3mil)	Ceramic	1.3	6 gr.	30-15000	All
91T	(1)	Repl. EV 76S Web. A1919	Q	4.25	91T, (1&3mil)	Ceramic	1.0	6 gr.	30-15000	All
91TX	(1)	Repl. EV 76DS Web. A1919	Q	12.50	91TX, (1X&3mil)	Ceramic	1.0	6 gr.	30-15000	All
93T1	(1)	Repl. EV51-1	Q1	3.95	93T1, Two (1mil)	Ceramic	1.0	6 gr.	30-15000	33 1/3, 45
93T2	(1)	Repl. EV52-2	Q1	3.95	93T2, Two (2mil)	Ceramic	1.0	6 gr.	30-15000	All
93T3	(1)	Repl. EV53-3	Q1	3.95	93T3, Two (3mil)	Ceramic	1.0	6 gr.	30-15000	78
93T	(1)	Repl. EV76S	Q1	3.95	93T, (1&3mil)	Ceramic	1.0	6 gr.	30-15000	All
93TX	(1)	Repl. EV76DS	Q1	12.50	93TX, (1X&3mil)	Ceramic	1.0	6 gr.	30-15000	All
106	(1)	Repl. Webster	R	4.95	N6-2*	Crystal	3.5	10 gr.	50-5000	All
118TS	(1)		S	6.45	N8-1 & N8-3	Crystal	0.75	8 gr.	30-13000	All
120TS	(1)		S	6.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
124TS	(1)		S	6.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
310-2	(1)		T	4.95	N8-2	Crystal	3.0	8 gr.	30-11000	All
310-T	(1)		T1	5.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
310-TS	(1)	310-TS-TB	T2	5.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
312-2	(3)		T	5.45	N8-2	Crystal	0.75	8 gr.	30-13000	All
312-T	(2)		T1	5.45	N8-1 & N8-3	Crystal	0.75	8 gr.	30-13000	All
312-TS	(3)	312TS-TB	T2	6.45	N8-1 & N8-3	Crystal	0.75	8 gr.	30-13000	All
314TS	(1)		T2	5.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
401	(4)	401A Repl. RCA	U	5.95	N4-3*	Crystal	1.4	2 3/4 oz.	50-4500	78
402	(1)	402M Repl. Adm.	V	7.95	G-78	Ceramic	0.7	12 gr.	50-10000	78
403	(2)	403J Repl. RCA	K	10.50	Q-(J)	Crystal	0.7	10 gr.	30-15000	78
405	(2)	Repl. Webster	O2	7.95	K-(J) & K-78(J)	Crystal	3.0	10 gr.	30-5000	All
406	(1)	Repl. Webster	O4	7.95	K-(J) & K-78(J)	Crystal	3.0	10 gr.	30-5000	All
407	(1)		W	4.45	N4-2	Crystal	4.0	10 gr.	50-6500	All
408	(1)	Repl. RCA	N	4.45	N10-1 (J)	Crystal	0.8	10 gr.	50-6000	33 1/3, 45
409	(1)	Repl. Adm.	M3	9.50	GD(J) 2 tips	Ceramic	0.7	8 gr.	30-15000	All
410	(1)	Repl. RCA	N	6.50	N11-1(J) & N12-3(M)	Crystal	0.8	8 gr.	50-6000	All
414-1	(1)		T1	4.45	N8-1	Crystal	3.0	8 gr.	30-11000	33 1/3, 45
414-2	(1)		T1	4.45	N8-2	Crystal	3.0	8 gr.	30-11000	All
416-2	(2)		T1	5.45	N8-2	Crystal	0.75	8 gr.	30-13000	All
420TS-TB	(1)	420TS, Repl. Ronette	X	5.45	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
422TS-TB	(1)	422TS, Repl. Ronette	X	5.95	N8-1 & N8-3	Crystal	0.75	8 gr.	30-13000	All
424TS	(1)	Repl. Webster	Y	6.50	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
426TS	(3)	Repl. Webster	Y	7.50	N8-1 & N8-3	Crystal	3.0	8 gr.	30-11000	All
430	(4)	Repl. Sonotone Sears	Z	7.50	Q (J)	Crystal	0.75	18 gr.	50-10000	78

J—Precision Polished Syn. Jewel Tip
M—Metal Needle
X—1 mil Precision Natural Diamond
* Needle Not Included
**Output with Condenser 1.25V.

All—16-2/3, 33-1/3, 45 & 78 RPM
T—Turnover Cartridge
TB—T.O. Cart. with Bracket
TY—T.O. Cart. with Formed Yoke
TS—T.O. Cart. with Round Spindle

-1=1 mil, 33-1/3—45 RPM
-2=2 mil, All
-3=3 mil, 78 RPM



LEADER WITH ORIGINALS — FIRST WITH REPLACEMENTS

ASTATIC SOUNDflo PLUG-IN CARTRIDGES

ASTATIC SOUNDFLO STEREO CARTRIDGES

First with four terminal contacts providing complete electrical isolation between channels, minimizing hum in AC-DC amplifiers, simplifying phasing.
Largest selling Stereo Cartridge to original equipment manufacturers—Models 11T7B and 13TB directly replaces other Stereo Cartridges.
First Stereo Cartridge to simplify conversion and installation—"The do it yourself" Stereo mounts in any standard arm, 7/16"-½" centers, FOR EVERY PHONO OR HI-FI SET, AC AND AC-DC.
Astatic Soundflo Stereo Cartridges are completely compatible. Play monaural and Stereo recordings superbly.

SPECIFICATIONS

4 Terminal Contacts . . 25 db Channel Separation . . Two Ceramic Elements . . 0.5 Volt Output 20-15,000 cps Response . Compliance of 2 . . 5-7 Grams Tracking Force.

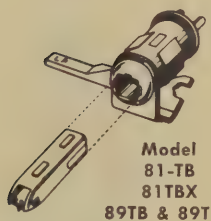
MODEL	DESCRIPTION	LIST PRICE
11T7	Two .7 mil sapphire tips*	$ 6.95
13T	One .7 mil and one 3 mil sapphire tip*	$ 6.95
13TX	One .7 mil diamond** and one 3 mil sapphire tip*	$15.50

MODEL	DESCRIPTION	LIST PRICE
11T7B	Same as 11T7 plus holder	$ 7.95
13TB	Same as 13T plus holder	$ 7.95
13TBX	Same as 13TX plus holder	$16.50

ASTATIC SOUNDFLO PLUG-IN MONAURAL CARTRIDGES

Wide range and hi fidelity ceramic plug-in cartridge needle combinations—for original equipment and direct replacement applications.

Model
81-T & 81-TX
89T & 89TX
83-1 & 83-1X



Model
81-TB
81TBX
89TB & 89TBX

MODEL 81TB—Wide range—Contains one 1 mil and one 3 mil sapphire (J) tips. Black housing with white dot. Turnunder lever and universal mounting bracket included. **List Price $ 4.95**

MODEL 81T—"Plug-in" two needle-cartridge combination only—for self replacement. **List Price $ 3.95**

MODEL 81TBX—Contains one 1 mil diamond (X) and one 3 mil sapphire (J) tips. Black housing with orange dot. Turnunder lever and universal mounting bracket included. **List Price $13.50**

MODEL 81TX—"Plug-in" two needle-cartridge combination only—for self replacement and replacement for 81T. Contains 1 mil diamond (X) and one 3 mil sapphire (J) tips. **List Price $12.50**

MODEL 83-1—"Plug-In" single needle cartridge combination contains one 1 mil sapphire tip—Direct replacement in RCA models. **List Price $3.50**

MODEL 89TB—Superior High Fidelity—Contains one 1 mil and one 3 mil sapphire (J) tips. Gold housing with white dot. Turnunder lever & mounting bracket included. **List Price $ 5.95**

MODEL 89T—"Plug-in" two needle-cartridge combination only—for self replacement and replacement for 81T. **List Price $ 4.95**

MODEL 89TBX—Contains one 1 mil diamond (X) and one 3 mil sapphire (J) tips. Gold housing with orange dot. Turnunder lever and universal mounting bracket included. **List Price $14.50**

MODEL 89TX—"Plug-in" two needle-cartridge combination only—for self replacement and replacement for 81T and 89T. Contains one 1 mil diamond (X) and one 3 mil sapphire (J) tips. **List Price $13.50**

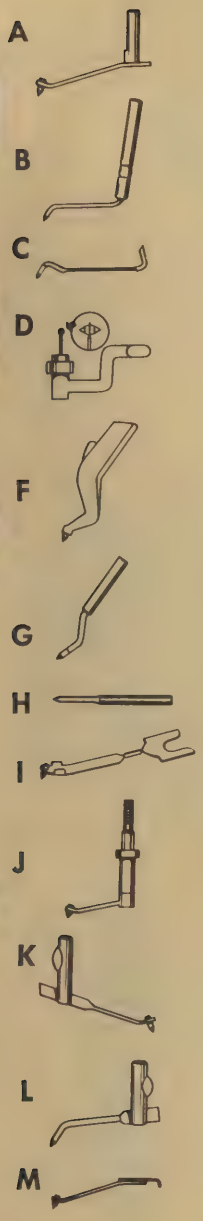
MODEL 83-1X—"Plug-in" single needle cartridge combination contains one 1 mil natural diamond tip. **List Price $12.00**

ASTATIC SOUNDFLO DIRECT REPLACEMENT PLUG-IN CARTRIDGES
for E.V. • R.C.A. • WEBSTER • WEBCOR • ZENITH

ASTATIC	TIP SIZE	LIST PRICE	REPLACES	RECORD SPEED
93T-1 (red dot)	two 1 mil*	$ 3.95	EV 51-1 (red)	33-1/3-45
93T-2 (green dot)	two 2 mil*	$ 3.95	EV 52-2 (green)	All
93T-3 (black dot)	two 3 mil*	$ 3.95	EV 53-3	78
93T (blue dot)	one 1 mil* & one 3 mil*	$ 3.95	EV56 (blue), Zenith 142-80 Webster Electric V8-1	All
93TX (orange dot)	one 1 mil* & one 3 mil*	$12.50	EV 56DS (orange) Zenith 142-83 Webster Electric V8-1D	All
91T (white dot)	one 1 mil* & one 3 mil*	$ 4.25	EV 76S (white) Webcor A1919 (white) Webster Electric V8-2	All
91TX (pink dot)	one 1 mil* & one 3 mil*	$12.50	EV 76DS (pink) Webster Electric V8-2D	All
83-1	one 1 mil*	$ 3.50	RCA	33-1/3-45
83-1X	one 1 mil**	$12.00	RCA	33-1/3-45

*Precision Polished Synthetic Jewel Tip
**Precision Natural Diamond Tip

ASTATIC *Original* PHONOGRAPH NEEDLES



NEEDLE TYPE	FIG.	LIST PRICES	TIP SIZE	FOR CARTRIDGE TYPES
A-1-J	A	2.50	1 mil.	40-1, 40-T, 40-TB, 41-1, 41-T, 41-TB
A-AG-J		2.50	AG	40-2, 41-2
A-3-J		2.50	3 mil.	40-3, 40-T, 40-TB, 41-3, 41-T, 41-TB
D-33-M	B	1.50	1 mil.	LT4D, LT4D1
D-AG-J		2.50	AG	60-2
D-M		1.50	3 mil.	LT-4D, LT-4D1
G-J	C	2.50	1 mil.	51-1, 53-1
G-AG-J		2.50	AG	51-2, 53-2
G-78-J		2.50	3 mil.	51-3, 53-3, 402
GD-J	D	3.50	2 Tips	53T, 55T
K-J	A	2.50	1 mil.	66-1, 66-TS, 66-TB, 66-TY, 68-1, 68-TS, 68-TB, 68-TY
K-AG-J		2.50	AG	66-2, 68-2
K-78-J		2.50	3 mil.	66-3, 66-TS, 66-TB, 66-TY, 68-3, 68-TS, 68-TB, 68-TY
N-1-J	F	2.50	3 mil.	Nylon series
N4-2J	G	1.50	AG	Conventional All Groove
N4-3J		1.50	3 mil.	Conventional 78 RPM
N6-2M	H	1.00	AG	106
N8-1J	I	1.50	1 mil.	310T, 310TB, 312TB, 414-1, 422TS, 420TS, 424TS, 314TS, 118-TS, 120-TS, 124-TS, 426-TS, and imported cartridges
N8-2J		1.50	AG	310-2, 312-2, 414-2, 416-2, 124-TS, 426-TS and imported cartridges
N8-3J		1.50	3 mil.	310T, 310TB, 312TB, 420TS, 422TS, 424TS, 118TS, 120TS -314TS and imported cartridges
N10-1J	J	1.50	1 mil.	408-RCA
N11-1J		2.50	1 mil.	410-RCA
N12-3M		1.50	3 mil.	410-RCA
N57-J	D	3.50	2 Tips	57TJ
Q-33-J	K	2.50	1 mil.	44-1, 44-TB, 62-T, 62-TY, 62-TB, 36, 38
Q-AG-J		2.50	2 mil.	44-2
Q-J		2.50	3 mil.	44-3, 44-TB, 62-T, 62-TY, 62-TB, 36, 38, 403
R-M	L	1.50	1 mil.	14L3, 14L3D, 15L3, 15L3D
R-AG-M		1.50	2 mil.	14L3AG, 15L3AG
R-78-M		1.50	3 mil.	14L3-78, 14L3D, 15L3-78, 15L3D
T-M	B	1.50	3 mil.	LT-1M, LT-2M, LT-3M
U-J	M	2.50	1 mil.	U
U-78-J		2.50	3 mil.	U-78, U-TR

J—Precision Polished Synthetic Jewel Needle
M—Precious Metal Needle

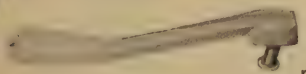
ASTATIC PHONOGRAPH PICKUPS

The "Studio Master" Model 400 Professional Series pickups are designed for use on all records up to 16" diameter including Stereo. Made of pressure cast aluminum with metalize gold finish.

Model 400-312-TB contains a turnover 312-T crystal cartridge with one 1 mil and one 3 mil sapphire needles. Output 0.75 volts, frequency range 30-13,000 cps, compliance 2.0. **LIST PRICE $19.75.**

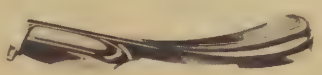
Model 400-89-TB contains a Soundflo 89-T ceramic plug-in cartridge with one 1 mil and one 3 mil sapphire tips. Contains four terminal cartridge holder to enable user to replace 89-T with Soundflo 13-T Stereo cartridge at a later date. Output 1.3 volts, frequency range 30-15,000 cps, compliance 2.5. **LIST PRICE $18.25.**

Model 400-13-TB contains a Soundflo 13-T Stereo plug-in ceramic cartridge with one 0.7 mil and one 3 mil sapphire tips. Compatible for playing all monaural and stereo records. Output 0.5 volts, frequency range 20-15,000 cps, lateral and vertical compliance 2.0. **LIST PRICE $22.25.**



MODEL KR-314-T PICKUP

Popular Astatic original equipment pickup with high output turnover cartridge. Ideal for self placement and as a direct replacement where ruggedness at low cost is required. The base of the pickup retracts into the tone arm for use on phonograph with low clearance in the lid. Supplied complete with mounting hardware and arm rest. Model KR-314T. **LIST PRICE $6.95.**



MODEL 8D PICKUP

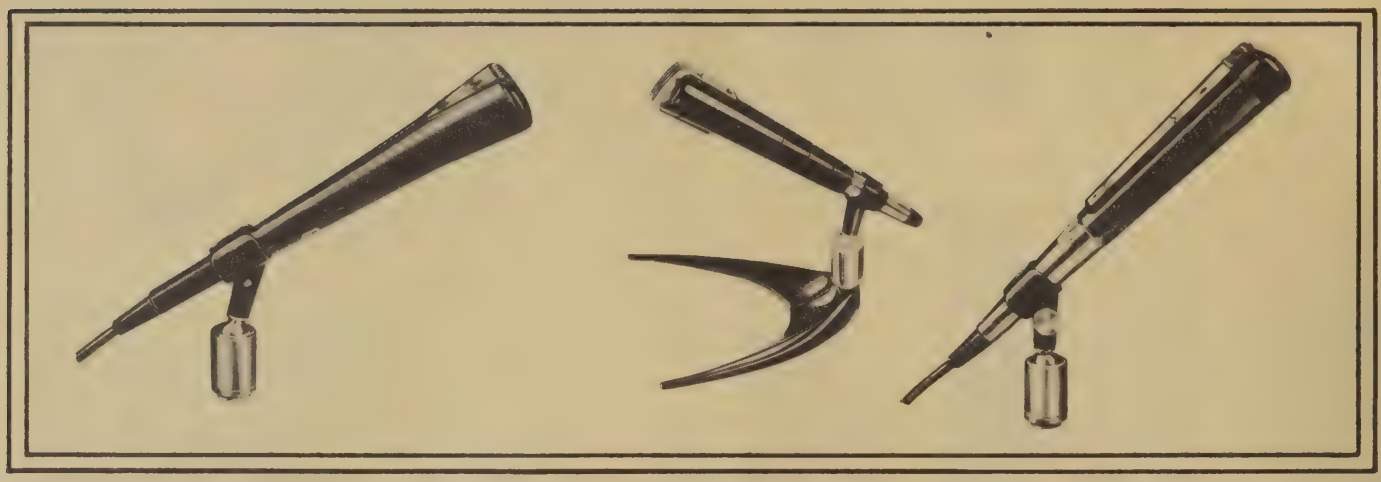
Astatic's replacement for Webcor changer models 246, 255, 256, 262, 264, 3A6, 355, 357, 363 and 364. Quality arm contains original turnover cartridge Model 40-TB. Changer requires no alteration. Simple installation. For all record speeds. Model 8D. **LIST PRICE $14.65.**

MODEL B-310T PICKUP

New modern design, sturdy construction, original equipment phonograph pickup. Gracefully styled, enhances the appearance of any phonograph. Ideal for converting older phonographs to modern design. Tone arm made of pressure cast aluminum gold finish. Cartridge output 3.0 volts, frequency range 30-11,000 cps. Model B-310T.

LIST PRICE $9.95

FAMOUS FUTURA SERIES . . . A NEW CONCEPT IN MICROPHONES
for HAND • for STAND • for LAVALIER



METRO 788—Superbly Styled Wide Range General Purpose Dynamic. High in quality—low in cost. Complete with lavalier and belt clip, 360° swivel adaptor for ⅝"-27 thread, 20 ft. two conductor shielded cable. Internal high-low impedance selector, on-off switch with "lock-on" position. Response 50-13,000 cps, output level -55 db, pressure cast housing. DuPont Mylar high tensile weatherproof, pop-proof, blast-proof diaphragm. Finish: non-reflecting satin black with brushed gold trim. Net weight: 8 oz.

LIST PRICE $79.50

VOGUE 988—World's Most Beautifully Styled Professional Dynamic Microphone. Ruggedly constructed. Exceptionally flat response 40-20,000 cps. For TV broadcasts, professional tape recording—for exactness of reproduction and flawless response. Output level -58 db. Internal impedance selector 50, 150 or 250 ohms balanced. Complete with 20 ft. two conductor anti-microphonic shielded cable with exclusive "latch-lock" connector containing Cannon XLR-3. 360° swivel adaptor for ⅝"-27 thread, lavalier assembly and belt clip. Pressure cast housing, DuPont Mylar high tensile weatherproof, pop-proof, blast-proof diaphragm. Finish: non-reflecting satin black with brushed gold trim. Net weight: 8¾ oz.

LIST PRICE (Less A-8 Stand) $150.00

TEMPO 888—Superior Wider Range Versatile Dynamic. A brilliant performer for universal applications. Complete with lavalier and belt clip, 360° swivel adaptor for ⅝"-27 thread, 20 ft. two conductor shielded cable with exclusive "latch-lock" connector containing Cannon XLR-3. Internal impedance selector 50-200 ohms balanced and high impedance. Response 50-15,000 cps, output -56 db, pressure cast housing. DuPont Mylar high tensile weather-proof, pop-proof, blast-proof diaphragm. Finish: non-reflecting satin black with brushed chrome trim. Net weight: 9 oz.

LIST PRICE $110.00

FOR COMPLETE ARCHITECT'S AND ENGINEER'S SPECIFICATIONS, ASK FOR BOOKLET S-438.

THE Seventy Seven

THE MOST POSITIVE ANTI-FEEDBACK
CARDIOID MICROPHONE EVER BUILT!

Highest Fidelity Dynamic Cardioid. Greatest degree front to back cancellation. Highest output. Available in non-reflecting satin chrome or beautiful brushed gold finish.

SPECIFICATIONS

FREQUENCY RESPONSE:	Uniform from 30 to 15,000 c.p.s.
IMPEDANCE:	Multi-Switch selection "L" 30 to 50 ohms, "M" 150 to 250 ohms, and "H" high impedance (40,000 ohms approx.)
ON-OFF SWITCH:	Included in lower portion of body; provisions for locking in "on" position.
POLAR PATTERN:	Absolute Cardioid: 18 db front to back differential—Astatic exclusive SINTERED BRONZE METHOD of acoustic phase shifting.
DIAPHRAGM:	"Mylar" new Dupont plastic film.
MAGNETIC CIRCUIT:	Employs Alnico Magnet and high permeability magnetic iron.
SHOCK MOUNTING:	Dynamic cartridge suspended to minimize unwanted mechanical vibrations.
HOUSING:	Pressure cast zinc housing and formed perforated grille. Head tilts 90° backward on adaptor.
FINISH:	Non-reflecting satin chrome or brushed gold with black grille liner cloth.
CABLE:	20 feet of two-conductor shielded; detachable from microphone.
STAND MOUNTING:	⅝"-27 thread.
DIMENSIONS:	8" high x 2-3/16" wide x 2¾" deep.
NET WEIGHT:	23 ounces.

MODEL 77	LIST PRICE	$82.50
MODEL 77L	LIST PRICE	72.50
MODEL G77	LIST PRICE	97.45
MODEL 77 (GOLD)	LIST PRICE	92.50
MODEL 77L (GOLD)	LIST PRICE	82.50

NEW

MODEL 77
Model 77 complete with 90° swivel built-in on-off switch—for floor and desk stand use.

MODEL G-77
Model G-77 complete; on Astatic G-stand.

MODEL 77L
Model 77L head only; mounts on G-stand.

FOR COMPLETE ARCHITECT'S AND ENGINEER'S SPECIFICATIONS, ASK FOR BOOKLET D-86.

THERE'S AN ASTATIC MICROPHONE FOR EVERY PURPOSE!

RECORDER MIKE

NEW

MODEL M-150 CRYSTAL MICROPHONE—

Unique modern style—especially designed for tape recorder use, has extremely high output and uniform frequency range. High impact ivory plastic body with gold rigidized metal grille. Output -44 db below 1 volt/dyne/cm^2. Range 30 to 10,000 cps with 5 megohm load resistance. 5' extra flexible single conductor shielded cable, 2-3/16" square and 1¼" depth. Net weight 3 ounces.

LIST PRICE $6.50

MODEL M-332 AND M-332-S

A-7 STAND

New Astatic Slim, High Fidelity Crystal Microphone. Lowest cost, widest response—30-15,000 cps. Improves tape recordings. *Excellent for P.A.* Designed for hand, stand and lavalier use. Smartly styled—precision made—pressure cast housing finished in smooth satin chrome with satin black grille. Supplied with lavalier cord and desk-floor stand adaptor with ⅝"-27 thread. Output level -54 db, high impedance, 8 ft. extra flexible highly shielded single conductor cable. MODEL M-332-S has on-off switch. Net weight: 6 oz.

LIST PRICES M-332 $17.90 M-332-S (with switch) $19.90
MODEL A-7 Desk Stand $2.45

"THE PIONEER"

MODEL T-3, GT-3—An Astatic Industry Standard. Now available separately or in combination with exclusive Astatic "G" Grip-to-Talk Stand. The all application METAL-SEAL crystal microphone. A top performer for P.A., industrial and amateur communications. Swivel hinge provides tilting action for semi to non-directional pickup, aids in controlling acoustic feed-back. Streamline appearance. Finish: bright chrome with mesh grille. Complete with adaptor for ⅝"-27 thread. Response 30-10,000 cps, output level -52 db, high impedance. Cable length—**T-3**, 10 ft. single conductor shielded; **GT-3** 6 ft. two conductor shielded. Net weight: 1 lb. (microphone only).

LIST PRICES: T-3 $29.30 GT-3 $49.50

(see accessories, page 8, for separate "G" stand listing)

"THE PREMIER"

MODELS D-104, D-104-C, GD-104 AND GD-104-C—The Radio Amateur's First Choice. Now available separately or in combination with exclusive Astatic "G" Grip-to-Talk Stand. Balanced performance for maximum intelligibility throughout the voice range. Machined brass parts and heavy mesh grille finished in bright chrome. Complete with adaptor for ⅝"-27 thread. **D-104** and **GD-104** use metal-seal crystal for protection against moisture and dryness. Output level -46 db. **D-104C AND GD-104-C** use ceramic element, immune to moisture and humidity. Output level -51 db. Frequency response 30-7,500 cps with rising characteristics 500-4,000 cps, both models. Cable length—**D-104 AND D-104-C**, 5 ft. single conductor shielded; **GD-104** and **GD-104-C**, 6 ft. two conductor shielded.

LIST PRICES				
D-104 (crystal)	$31.00	GD-104-C (ceramic)	$51.20
D-104-C (ceramic)	$31.00	GD-104 (crystal)	$51.20

"THE DYNAMIKE"

MODELS M-350 AND M-352—Low Cost Wide Range Dynamic Microphone. Versatile, all around high or low impedance dynamic microphone for P.A., tape recording, communications, industrial applications. **MODEL M-350.** High impedance, output level -56 db, response 50-10,000 cps, complete with adaptor for ⅝"-27 thread. 10 ft. single conductor shielded cable. Finish: non-reflecting satin black with brushed chrome trim. **MODEL M350-S.** Same as above with switch adaptor. **MODEL M-352.** Same as **M-350** but low impedance 50 ohms balanced and 10 ft. two conductor shielded cable. **MODEL M-352-S.** Same as **MODEL M-352** but with switch adaptor. Net weight: 16 oz.

LIST PRICES

M-350 (high impedance)	$41.50	M-352 (low impedance)	$37.50
M-350S (with switch)	$46.50	M-352S (with switch)	$44.75

"THE SPOKESMAN"

MODELS JT-30 AND JT-30C—The Standard of the Industry. High quality—low price—specially-designed for general P.A., recording and communications. Includes handle and interlocking base. Threaded for ⅝"-27 mounting on standard desk-floor stands. Opalescent grey baked Hammerlin finish with bright chrome grille and industry standard cable connector. **MODEL JT-30** (crystal). High impedance—range 30-10,000 cps—output -49 db—8 ft. single conductor shielded cable. **MODEL JT-30-C** (ceramic). High impedance—range 30-10,000 cps—output -54 db—5 ft. single conductor shielded cable.

LIST PRICES: MODEL JT-30 (crystal) $18.40
MODEL JT-30-C (ceramic) $18.90

"THE COMMENTATOR"

MODELS DN-50, GDN-50, UGDN-50, DN-HZ, GDN-HZ—Famous Astatic Dynamic Communication and General Purpose Microphones. *Now available* separately or in combination with exclusive Astatic "G" Grip-to-Talk Stand. Ruggedly constructed, tilting head swivel mount for semi or non directional applications. Finish: opalescent grey baked enamel, bright chrome grille and trim. Response 50-7,000 cps. **MODELS UGDN-50 AND DN-50** low impedance 50 ohms (balanced), **GDN-50** (unbalanced). Output level -51 db. Cable length—**GND-50 AND UGDN-50**, 6 ft.; **DN-50**, 10 ft. two conductor shielded. **MODELS GDN-HZ AND DN-HZ**, high impedance, output level -55 db. Cable length—**GDN-HZ**, 6 ft.; **DN-HZ**, 10 ft., single conductor shielded. Net weight: 1 lb. (microphone only).

LIST PRICES

DN-50 (low imp.)	$33.50	DN-HZ (high imp.)	$39.70
UGDN-50 (low imp.)	$56.00	GDN-HZ (high imp.)	$59.90
GDN-50 (low imp.)	$52.70		

(see accessories, page 8, for separate "G" stand listing)

"THE VOICE"

NEW

MODEL 10-C CERAMIC and 10-D DYNAMIC high impedance microphones. Level -54 db. Limited Range 300-3000 cps. Tailored Response for Higher Talk Power and Balanced Sibilance for ideal reproduction of speech. Outstanding Performance when used with SSB and AM transmitters, also, Paging and Industrial Applications. Plug-in ⅝"-27 thread mounting with 5' single conductor shielded cable.

Finish—10-C—opalescent grey chrome grille
10-D—chrome body and grille

LIST PRICE

MODEL 10-C (CERAMIC)	$29.70
MODEL G-10-C with "G" (Grip-to-talk) Desk Stand	$49.90
MODEL 10-D (DYNAMIC)	$39.70
MODEL G-10-D with "G" (Grip-to-talk) Desk Stand	$59.90

"THE VELVET VOICE"

MODELS 200, 200-S AND 241-S—An Astatic Exclusive. All purpose, low cost, hand held, desk-floor stand crystal microphone for P.A. home recording, paging and amateur communication applications. Gold finish die cast housing and handle with bright chrome grille. Quick lock detachable base, standard ⅝"-27 thread mounting. **MODEL 200.** High impedance—wide range 30-10,000 cps—Output -50 db —8 ft. single conductor shielded cable. **MODEL 200-S.** Same as above, with lock-type switch. **MODEL 241-S.** Same as **MODEL 200-S** except rising response 1500 to 5500 cps.

LIST PRICES
Model 200 $19.50 Model 200-S $21.50
Model 241-S $21.50

THERE'S AN ASTATIC MICROPHONE FOR EVERY PURPOSE!

"THE COMMUNICATOR"

MODEL 10M5A—Popular Rugged Carbon Communications Microphone. Widely used for mobile, marine and aircraft communications. Contains R.F. filter. Light weight pressure cast housing, heavy duty thumb switch, high sensitivity. Complete with 5 ft. four conductor coiled cord and anti-rattle hang-up bracket. Frequency response flat from 100-4500 cps. Power level approx. 2 db above 6 MW for 100 microbar sound pressure, operating current 10 to 100 M.A. operating voltage 6 to 24 volts. Net weight: 1 lb. 2½ oz.

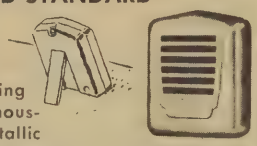
LIST PRICE $29.50

"THE UNIVERSAL"

MODEL 54-M3—Low Cost, Versatile. Crystal microphone. Non-directional, designed for conference, P.A. and recording. Pressure cast housing. Finish: Brown baked Hammerlin, brushed gold head and grille. Complete with interlocking base. Handle threaded ⅝"-27 for floor stand mounting. 5 ft. single conductor shielded cable. Response 30-10,000 cps, output level -51 db. Weight: 15 oz.

LIST PRICE $17.95

"THE GOLD STANDARD"



MODELS M-301, M-302 — High Quality, Low Cost. Unique modern styling with pressure cast housing. Finished in metallic gold. Desk standard hinges in and out of the back. Available with ceramic or metal seal crystal element. Designed primarily for home recording. Can be used to replace many hand held and desk type high impedance microphones. 8 ft. single conductor shielded cable. **MODEL M-301** (ceramic). Output -53 db. Range 30-10,000 cps. **MODEL M-302** (metal seal crystal). Output -48 db. Range 30-10,000 cps.

LIST PRICES

MODEL M-301 (ceramic)	$11.50
MODEL M-302 (crystal)	$12.50

"THE ECONOMIKE"

MODELS M-101, M-102—Lowest Cost, Wide Range. Designed for hand held use. For home recording, paging. Durable, lightweight plastic housing. Choice of crystal or ceramic models. **M-101** (ceramic) response 30-10,000 cps, output level -53 db. **M-102** (crystal) response 30-10,000 cps, output level -48 db. High impedance, 5 ft. single conductor shielded cable both models. Net wt.: 4 oz.

LIST PRICES

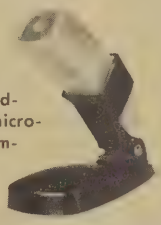
M-101 (ceramic)	$8.75
M-102 (crystal)	$9.70

"THE LECTURER"

MODEL L-1—Small and efficient—High quality—Inconspicuous crystal microphone. Spring clip for attachment to speaker's coat lapel or other garment. Precision built, wide range performance. Wire mesh front and rear grilles. Black melamine finish. 15 ft. small diameter single conductor shielded cable. High impedance. Output -62 db. Range 30-10,000 cps.

LIST PRICE $27.35

NEW **MODEL A-7 DESK STAND**



Modern design—miniature desk stand with adjustable swivel for models M330, M-332 and M-332-S microphones. Rigid, light weight, high impact satin black plastic base and holder

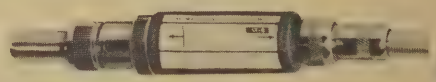
LIST PRICE $2.45

NEW **HIGH QUALITY CABLE TYPE IMPEDANCE MATCHING TRANSFORMER**

MODEL LT-6

Matches low impedance microphones to high impedance or high to low matching to amplifier. Permits use of long cables with minimum loss. Eliminates high frequency loss and objectionable hum pickup where long length of microphone cable is necessary.

Completely shielded, sturdy construction, finished in opalescent grey. Furnished complete with Amphenol 91-852 and 75 MC1F connectors.



INPUT: 30-50 OHMS OR 150-250 OHMS
OUTPUT: High impedance (approximately 40,000 OHMS)
RESPONSE: 20-20,000 CPS ± 1DB

LIST PRICE $17.50

MICROPHONE STANDS

MODEL G STAND—Has grip-to-talk SPST on-off switch, sliding bar for "lock-on." Use with **DN-50, DN-HZ, T3, D-104, 10-C, 10-D.** Finish: bright chrome, grey Hammerlin base. **LIST PRICE $24.95**

MODEL UG STAND—Incorporates grip-to-talk on-off switch with sliding bar for "lock-on." Use with **DN-50** microphone balanced line.

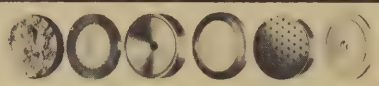
LIST PRICE $28.30

MODEL E-5-G, E-5-B DESK STANDS—Finish: grey or brown Hammerlin base with bright chrome stem. Has ⅝"-27 thread. Overall height 8".

LIST PRICE $7.75

MODEL E-1 DESK STAND—Finish: grey Hammerlin base, bright chrome stem. Has ⅝"-27 thread. Overall height 5½". **LIST PRICE $8.25**

MODEL A-8 DESK STAND—Futura microphone stand. Also may be used for other standard microphone. Finish: smooth satin black. Has ⅝"-27 thread. **LIST PRICE $8.25**



ASTATIC REPLACEMENT MICROPHONE CARTRIDGES

MC-151—Used in models CX, CX-1, 200, 241, JT-30, JT-40, T-3. **LIST PRICE $7.00**

MC-127—Used in models CC,CC-1, VC, VC-1, JT-30C, JT-40C, T-3C. **LIST PRICE $7.00**

MC-451—Used in models 10M5, 10M5A, 11M5. **LIST PRICE $8.75**

MC-226—Used in models DN-50, DN-500, DN-HZ, DN-MZ. **LIST PRICE $16.50**

MC-320—Used in model D-104. **LIST PRICE $9.50**

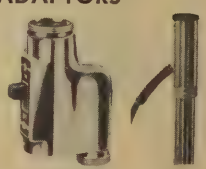
MC-321—Used in model D-104-C. **LIST PRICE $7.00**

MC-551—Used in model M-301. **LIST PRICE $7.00**

MC-552—Used in models M-300, M-302. **LIST PRICE $7.00**

MC-205—Used in models 12M3, 54M3, N-30. **LIST PRICE $7.00**

CONNECTORS - ADAPTORS



MODEL F-11 ADAPTOR—Socket cable connector with ⅝"-27 thread mounting. Finish: bright chrome. Has 5 ft. single conductor shielded cable, for use with microphone models **DN-HZ, T-3, D-104, D-104-C, 10-C, 10-D.**

MODEL F-12 ADAPTOR—Same as above except has 5 ft. two conductor shielded cable, for use with model **DN-50 microphone.**

MODELS SC-11, SC-12 SWITCH CONNECTORS—Have standard receptacles to receive interchangeable connector used on Astatic microphones. Also have connection for industry standard cable connector, **SC-11** for use with microphones **T-3, DN-HZ, D-104, D-104-C, 10-C, 10-D, SC-12,** for use with microphone **DN-50.**

LIST PRICES

SC-11	$9.00 (less cable)
SC-12	$11.25 (less cable)
F-11	$ 4.75
F-12	$ 5.75

Printed in U.S.A.

ASTATIC CORPORATION, CONNEAUT, OHIO

October , 1958

DISTRIBUTED BY

PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

THE ASTATIC CORPORATION

KNOWN THE WORLD OVER

CONNEAUT OHIO

The Astatic Corporation, acknowledged for more than a quarter of a century as a pioneer and leader in the field of sound reproduction equipment, is proud of its many contributions to this industry. With its extensive research facilities and modern three-acre plant in Conneaut, Ohio, The Astatic Corporation continues to lead the way in the constant search for ever better sound reproduction equipment for business and industry..

ASTATIC

Pickup Cartridge Cross Reference

CRC-58

October 1958

"Leader with Originals, First with Replacements"

PICKUP CARTRIDGE REPLACEMENT CHART

Old Cartridge Number	Stock Number	Astatic Needle RECOMMENDED
AC (J;M)	40-1	A-1-J
AC-AG (J;M)	40-2	A-AG-J
AC-78 (J;M)	416-2	AC-78=A-3-J 416-2=N8-2
ACD-(J;M;JM)	40-T or (312-T economy model.)	40-T=A-1-J & A-3-J 312-T=N8-1 & N8-3
ACD-1 or 2 (J;M;JM)	40-TB or (422TS-TB economy model.)	40-TB=A-1-J & A-3-J 422TS-TB=N8-1 & N8-3
ACR (J;M)	42-1	A-1-J
AC-C (J;M)	51-1	AC-C (J;M)=A-1-J 51-1=G-J
AC-C-AG (J;M)	41-2 (if not available use 51-2)	41-2=A-AG-J 51-2=G-AG-J
AC-C-78 (J;M)	51-2	ACC-78 (J;M)=A-3-J 51-2=G-AG-J
ACD-C (J;M;JM)	41-T	A-1-J & A-3-J
ACD-C-1 or 2 (J;M;JM)	41-TB or (81-TB economy model.)	41-TB=A-1-J & A-3-J 81TB=81T 1 (1mil) & 1 (3mil)
B-1, B-2, B-3, B-4	2	N4-3 (J)*
B-PN-2	NO REPLACEMENT—FACTORY REPAIR SERVICE	
CAC (J;M)	44-1 (if not available use 416-2)	44-1=Q-33-J 416-2=N8-2
CAC-AG (J;M)	44-2 (if not available use 416-2)	44-2=Q-AG-J 416-2=N8-2
CAC-78 (J;M)	44-3 (if not available use 416-2)	44-3=Q-J 416-2=N8-2
CAC-D (J;M;JM)	44-TB (if not available use 422TS-TB)	44-TB=Q-33-J & Q-J 422TS-TB=N8-1 & N8-3
CAC-1 (J;M)	59-2	59-2=G-AG-J CAC-1=Q-33-J
CAC (X)	44-1 (if not available use 416-2)	44-1=Q-33-J CAC-X=Q-33-X
CAC-78 (X)	44-3 (if not available use 416-2)	44-3=Q-J CAC-78-X=Q-X
CAC-1 (X)	59-2	59-2=G-AG-J CAC-1X=Q-33-X
CAC-W (J;M)	51-1	51-1=G-J CAC-W=Q-33-J
CAC-AGW (J;M)	51-2	51-2=G-AG-J CAC-AGW=Q-AG-J
CAC-78-W (J;M)	51-2	51-2=G-AG-J CAC-78-W=Q-J
CAC-WX	51-1	51-1=G-J CAC-WX=Q-33-X
CQ (JM)	44-1 (if not available use 416-2)	44-1=Q-33-J 416-2=N8-2
CQ-AG (J;M)	44-2 (if not available use 416-2)	44-2=Q-AG-J 416-2=N8-2
CQ-78 (J;M)	44-3 (if not available use 416-2)	44-3=Q-J 416-2=N8-2
CQ-1 (J;M)	59-2	59-2=G-AG-J CQ-1=Q-J
CT-1 (J;M)	430	Q-J
GC (J;M)	51-1	G-J
GC-AG (J;M)	51-2	G-AG-J
GC-78 (J;M)	51-2	51-2=G-AG-J GC-78=G-78-J
GCD- (J;M)	55-T or (81-TB economy model.)	55T=GDJ 81TB=81T 1 (1mil) & 1 (3mil)
GC-1 (J;M)	59-2	59-2=G-AG-J GC-1=G-J
GC-1-AG (J;M)	59-2	G-AG-J
GC-1-78 (J;M)	59-2	59-2=G-AG-J GC-1-78=G-78-J
L-10	12	N4-3 (J)*
L-12	12	N4-3 (J)*
L-12-U	12-U	N4-3 (J)*
L-22-A	4	N4-3 (J)*
L-24-A	32	N4-3 (J)*
L-25-A	24	N4-3 (J)*
L-26-A	4	N4-3 (J)*
L-27-A	4	N4-3 (J)*
L-29	22	N4-2 (J)*
L-32-A	4	N4-3 (J)*
L-36-A	32	N4-3 (J)*
L-40-A	6	N4-3 (J)*
L-41-A	6	N4-3 (J)*
L-46-A	26	N4-3 (J)*
L-50-A	26	N4-3 (J)*
L-70 (A;S;AS)	24	N4-3 (J)*
L-71 (A;S;AS)	24	N4-3 (J)*
L-72 (A;S;AS)	26	N4-3 (J)*
L-73 (A;S;AS)	51-2	L-73=N4-3 (J)* 51-2=G-AG-J
L-74 (A;S;AS)	51-2	L-74=N4-3 (J)* 51-2=G-AG-J
L-75 (A;S;AS)	24	N4-3 (J)*
L-76 (A;S;AS)	24	N4-3 (J)*
L-78 (A;S;AS) (10)	51-2	L-78=N4-3 (J)* 51-2=G-AG-J
L-80 (A;S;AS)	51-2	L-80=N4-3 (J)* 51-2=G-AG-J
L-82 (A;V)	32	N4-3 (J)*
L-92-A	34 (if not available use 32)	N4-3 (J)*
L-92-33	22	N4-2 (J)*
LP-6	36 (if not available use 416-2)	LP-6 Needle not replaceable (416-2=N8-2) (36=Q-J)
LP-21	36 (if not available use 416-2)	LP-21 Needle not replaceable (416-2=N8-2) (36=Q-J)
LP-23	36 (if not available use 416-2)	LP-23 Needle not replaceable (416-2=N8-2) (36=Q-J)
LP-33 (J;M)	50-1	50-1=U-J LP-33 Needle not replaceable
LP-78	50-3 (if not available use 50-1 and U-78-J needle)	50-3=U-78-J LP-78 Needle not replaceable
LP-TR	50-3 (if not available use 50-1 and U-78-J needle)	50-3=U-78-J LP-TR Needle not replaceable
LQD (J;M;JM)	62-T (if not available use 312-T)	62-T=Q-33-J & Q-J 312-T=N8-1 & N8-3
LQD-1 (J;M;JM)	62-TY	62-TY=Q-33-J & Q-J
LQD-1B (J;M;JM)	62-TB (if not available use 422TS-TB)	62-TB=Q-33-J & Q-J 422TS-TB=N8-1 & N8-3
LT-1M	66-3	66-3=K-J LT-1M=T
LT-2M	66-3	66-3=K-J LT-2M=T
LT-3M	66-3	66-3=K-J LT-3M=T
LT-3M-PN	51-2	51-2=G-AG-J LT3MPN=T
LT-3DM	62-T (if not available use 312-T)	62-T=Q-J & Q-33-J 312-T=N8-1 & N8-3 LT-3DM=D & D-33
LT-4 (M)	414-1	LT-4 (M)=D-33 414-1=N8-1
LT-4AG (JM)	60-2 or (416-2 economy model)	60-2 & LT-4AG=D-AG-J 416-2=N8-2
LT-4-78 (M)	66-3	66-3=K-78-J LT-4-78 (M)=D-78-(M)
LT-4DM	62-T (if not available use 312-T)	62-T=Q & Q-33 LT-4DM=D & D-33 312-T=N8-1 & N8-3
LT-4D-1M	66-TY	66-TY=K & K-78 LT-4D-1M=D & D-33
LT-5-AGM	66-2	66-2=K-AG (J) LT-5-AG=D-AG
M-22	28	N4-2 (J)*
M-23	28	N4-2 (J)*
MD-1 (J;M)	MD-5	Special for Markel changer, available on request.
MD-3 (J;M)	MD-6	Special for Markel changer, available on request.
MD-5 (J;M)	MD-5	Special for Markel changer, available on request.

(*. . Needle not included with cartridge)

PICKUP CARTRIDGE REPLACEMENT CHART

Old Cartridge Number	Stock Number	Astatic Needle RECOMMENDED
MD-6 (J;M)	MD-6	Special for Markel changer, available on request
MI-2 (J;M)	NO REPLACEMENT—FACTORY REPAIR SERVICE	
MLP-1 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 MLP-1=Needle not replaceable
MLP-2 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 MLP-2= Needle not replaceable
MLP-3 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 MLP-3=Needle not replaceable
Nylon-1 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 Nylon 1=Nylon
PT	66-3	66-3=K-78-J PT=Needle not replaceable
Q-C (J;M)	51-2	51-2=G-AG-J Q-C=Needle not replaceable
QT-MIR	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 QT-MIR=Q-J
QT-2 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 QT-2=Q-J
QT-2PN (J;M)	51-2	51-2=G-AG-J QT-2PN=Q-J
QT-3 (J;M)	36 (if not available use 416-2)	36=Q-J; 416-2=N8-2 QT-3=Q-J
QT-3PN (J;M)	51-2	51-2=G-AG-J QT-3PN=Q-J
QT-33 (J;M)	44-1 (if not available use 416-2)	416-2=N8-2 44-1=Q-33-J; QT-33=Q-33-J
U (J;M)	50-1	U-J
U-78 (J;M)	50-3 (if not available use 50-1 and U-78-J needle)	U-78-J
U-TR (J;M)	50-3 (if not available use 50-1 and U-78-J needle)	U-78-J
2 (B-2)	2	N4-3 (J)*
4 (L-26-A)	4	N4-3 (J)*
6 (L-40-A)	6	N4-3 (J)*
10 (L-78)	51-2	10=N4-3 (J)* 51-2=G-AG-J
10L3 (J;M)	40-T or (312-T economy model)	40-T=A-1-J & A-3-J 312-T=N8-1 & N8-3
11L3 (J;M)	40-TB or (422TS-TB economy model)	11L3=A-1-J & A-3-J 422TS-TB=N8-1 & N8-3
11T7	11T7	11T7 2 (.7 Tips)
11T7B	11T7B	11T7 2 (.7 Tips)
12 (L-12)	12	N4-3 (J)*
12-U (L-12-U)	12-U	N4-3 (J)*
12L3 (M)	66-TY	66-TY=K & K-78 12L3=D & D-33
13T	13T	13T=1 (.7) & 1 (3 Mil)
13TB	13TB	13T=1 (.7) & 1 (3 Mil)
13TBX	13TBX	13TX=1 (.7X) & 1 (3Mil)
13TX	13TX	13TX=1 (.7X) & 1 (3Mil)
14 (L-74-A)	51-2	14=N4-3 (J)* 51-2=G-AG-J
14L3-M	414-1	414-1=N8-1 14L3M=R-M
14L3-AG (M)	66-2	66-2=K-AG-J 14L3-AGM=R-AG-M
14L3-78 (M)	66-3	66-3=K-78-J 14L3-78M=R-78-M
14L3D (M)	66-TY	66-TY=K-J & K-78-J 14L3DM=R(M) & R-78 (M)
14L3D (MB)	66-TB or (420-TS-TB economy model)	66-TB=K-J & K-78-J 14L3-DMB=R(M) & R-78 (M) 420TS-TB=N8-1 & N8-3
15L3 (M)	414-1	414-1=N8-1 15L3M=R(M)
15L3-AGM	66-2	66-2=K-AG-J 15L3-AGM=R-AG(M)
15L3-78M	66-3	66-3=K-78-J 15L3-78M=R-78(M)
15L3DM	66-TY	66-TY=K-J & K-78-J 15L3DM=R(M) & R-78 (M)
15L3DMB	66-TB or (420-TS-TB economy model)	66-TB=K-J & K-78-J 420TS-TB=N8-1 & N8-3 15L3DMB=R(M) & R-78 (M)
16	16	N4-2 (J)*
16L3	16	N4-2 (J)*
17L3	16	N4-2 (J)*
18	18	N6-2 (J)*
18L3	22	N4-2 (J)*
22 (L-29)	22	N4-2 (J)*
24 (L-70-A)	24	N4-3 (J)*
26 (L-72)	26	N4-3 (J)*
28	28	N4-2 (J)*
32 (L-82-A)	32	N4-3 (J)*
34 (L-92-A)	34 (if not available use 32)	N4-3 (J)*
36 (QT-2J)	36 (if not available use 416-2)	36=Q-J 416-2=N8-2
38 (QT-2-JPN)	51-2	51-2=G-AG-J 38=Q-J
40-1 (AC-J)	40-1	A-1-J
40-2 (AC-AGJ)	40-2	A-AG-J
40-3 (AC-78-J)	416-2	416-2=N8-2 40-3=A-78-J
40-T (ACD-J)	40-T or (312-T economy model)	40-T=A-1-J & A-3-J 312-T=N8-1 & N8-3
40-TB (ACD-2J)	40-TB or (422TS-TB economy model)	40-TB=A-1-J & A-3-J 422TS-TB=N8-1 & N8-3
41-1 (ACC-J)	51-1	51-1=G-J 41-1=A-1-J
41-2 (ACCAGJ)	41-2 (if not available use 51-2)	41-2=A-AG-J 51-2=G-AG-J
41-3 (ACC-78J)	51-2	41-3=A-3-J 51-2=G-AG-J
41-T (ACDC-J)	41-T	A-1-J & A-3-J
41-TB (ACDC-2J)	41-TB or (81-TB economy model)	41-TB=A-1-J & A-3-J 81-TB=81-T (1 1Mil & 1 3Mil)
42-1 (ACR-J)	42-1	A-1-J
44-1 (CAC-J)	44-1 (if not available use 416-2)	44-1=Q-33-J 416-2=N8-2
44-2 (CAC-AGJ)	44-2 (if not available use 416-2)	44-2=Q-AG-J 416-2=N8-2
44-3 (CAC-78J)	44-3 (if not available use 416-2)	44-3=Q-J 416-2=N8-2
44-TB (CAC-DJ)	44-TB (if not available use 422-TS-TB)	44-TB=Q-33-J & Q-J 422TS-TB=N8-1 & N8-3
46-1 (CAC-WJ)	51-1	51-1=G-J 46-1=Q-33-J
46-2 (CAC-AGWJ)	51-2	51-2=G-AG-J 46-2=Q-AG-J
46-3 (CAC-78-WJ)	51-2	51-2=G-AG-J 46-3=Q-J
48-1 (CAC-1J)	59-2	59-2=G-AG-J 48-1=Q-33-J
50-1 (UJ)	50-1	U-J
50-3 (U-78-J)	50-3 (if not available use 50-1 and U-78-J needle)	50-3=U-78-J
51-1 (J;M)	51-1	G-J
51-2 (J;M)	51-2	G-AG-J
51-3 (J;M)	51-3 (if not available use 51-2)	51-3=G-78-J 51-2=G-AG-J
53-1 (J;M)	53-2	53-2=G-AG-J 53-1=G-J
53-2 (J;M)	53-2	G-AG-J
53-3 (J;M)	53-2	53-2=G-AG-J 53-3=G-78-J
53-T (J;M)	53-T	GD-J (2 Tips)
55-T (J;M)	55-T or (81-TB economy model)	GD-J (2 Tips) 81TB=81T plug-in
57-T (J;M)	57-T	N-57-J (2 Tips)

(*. . Needle not included with cartridge)

PICKUP CARTRIDGE REPLACEMENT CHART

Old Cartridge Number	Stock Number	Astatic Needle RECOMMENDED
59-1 (J;M)	59-2	59-2=G-AG-J 59-1=G-J
59-2 (J;M)	59-2	G-AG-J
59-3 (J;M)	59-2	59-2=G-AG-J 59-3=G-78-J
60-2 (LT-4AG)	60-2 (or 416-2 economy model)	60-2=D-AG-J 416-2=N8-2
62-1 (M)	62-1	A-1-J
62-T (LQD-J)	62-T (if not available use 312-T)	62-T=Q-33-J & Q-J 312-T=N8-1 & N8-3
62-TB (LQD-1JB)	62-TB (if not available use 422TS-TB)	62-TB=Q-33-J & Q-J 422TS-TB=N8-1 & N8-3
62-TY (LQD-J)	62-TY	Q-33-J & Q-J
64-TS (TMS)	64-TS	K-J & K-78-J
66-1 (M)	414-1	414-1=N8-1 66-1=K-J
66-2 (M)	66-2	K-AG-J
66-3 (M)	66-3	K-78-J
66-TB (TMB)	66-TB or (420-TS-TB economy model)	66-TB=K-J & K-78-J 420TS-TB=N8-1 & N8-3
66-TMB	66-TB or (420-TS-TB economy model)	66-TMB=K-J & K-78-J 420TS-TB=N8-1 & N8-3
66-TS (TMS)	66-TS	K-J & K-78-J
66-TMS	66-TS	K-J & K-78-J
66-TY (TMY)	66-TY	K-J & K-78-J
66-TMY	66-TY	K-J & K-78-J
68-1 (M)	414-1	414-1=N8-1 68-1=K-J
68-2 (M)	66-2	K-AG-J
68-3 (M)	66-3	K-78-J
68-TB (TMB)	66-TB or (420-TS-TB economy model)	68-TB=K-J & K-78-J 420TS-TB=N8-1 & N8-3
68-TMB	66-TB or (420-TS-TB economy model)	68-TMB=K-J & K-78-J 420TS-TB=N8-1 & N8-3
68-TS (TMS)	66-TS	K-J & K-78-J
68-TMS	66-TS	K-J & K-78-J
68-TY (TMY)	66-TY	K-J & K-78-J
68-TMY	66-TY	K-J & K-78-J
81-T	81-T	81-T 1 (1Mil) & 1 (3Mil) Tip
81-TB	81-TB	81-T 1 (1Mil) & 1 (3Mil) Tip
81-TBX	81-TBX	81TX 1 (1MilX) & 1 (3Mil) Tip
81-TX	81-TX	81TX 1 (1MilX) & 1 (3Mil) Tip
83-1	83-1	83-1 1 (1Mil) Tip
83-1X	83-1X	83-1X 1 (1MilX) Tip
85-D1	85-D1	Special—(Available upon request)
89-T	89-T	89-T 1 (1Mil) & 1 (3Mil) Tip
89-TB	89-TB	89-T 1 (1Mil) & 1 (3Mil) Tip
89-TBX	89-TBX	89-TX 1 (1MilX) & 1 (3Mil) Tip
89-TX	89-TX	89-TX 1 (1MilX) & 1 (3Mil) Tip
90 (TJB, TJS)	422TS-TB	422TS-TB=N8-1 & N8-3 90-TJB=A-1-J & A-3-J
91-T	91-T	91-T 1 (1Mil) & 1 (3Mil) Tip
91-TX	91-TX	91-TX 1 (1MilX) & 1 (3Mil) Tip
93-T	93-T	93-T 1 (1Mil) & 1 1 (3Mil) Tip
93T1	93T1	93-T1 2 (1Mil) Tips
93T2	93T2	93T2 2 (2Mil) Tips
93T3	93T3	93T3 2 (3Mil) Tips
93TX	93TX	93TX 1 (1MilX) & 1 (3Mil) Tip
94TMB	420TS-TB	420TS-TB=N8-1 & N8-3 94TMB=K-J & K-78-J
94-2	414-2	414-2=N8-2 94-2=A-AG-J
106	106	N6-2*
112TS	420TS-TB	420TS=N8-1 & N8-3 112TS=A-1-J & A-3-J
118TS	118TS	N8-1 & N8-3
120TS	120TS	N8-1 & N8-3
124TS	124TS	N8-1 & N8-3
310-2	310-2	N8-2
310-T	310-T	N8-1 & N8-3
310-TS-TB	310-TS	N8-1 & N8-3
312-2	312-2	N8-2
312-T	312-T	N8-1 & N8-3
312-TS-TB	312-TS	N8-1 & N8-3
314-TS	314-TS	N8-1 & N8-3
401 (A)	401	N4-3 (J)*
402 (M)	402	G-78
403 (J)	403	Q-J
405	405	K-J & K-78-J
406	406	K-J & K-78-J
407	407	N4-2
408	408	N10-1J
409	409	GD-J (2 Tips)
410	410	N11-1 & N12-3
414-1	414-1	N8-1
414-2	414-2	N8-2
416-2	416-2	N8-2
420TS	420TS-TB	N8-1 & N8-3
422TS	422TS-TB	N8-1 & N8-3
424TS	424TS	N8-1 & N8-3
426TS	426TS	N8-1 & N8-3
430	430	Q-J

(*. . Needle not included with cartridge)

LEGEND FOR CARTRIDGE SYMBOLS

J—Precision Polished Syn. Sapphire Tip
M—Precious Metal Tip
X—Diamond Tip

*Needle Not Included
-1=1 mil, 33-1/3-45 RPM
-2=2mil, All speeds
-3=3 mil, 78 RPM
Slow—16-2/3, 33-1/3, 45 RPM

Std.—78 RPM
All—33-1/3, 45 & 78 RPM
T—Turnover Cartridge

TB—T.O. Cart. With Bracket
TY—T.O. Cart. With Formed Yoke
TS—T.O. Cart. With Round Spindle

ASTATIC CUTTING HEADS

Old Cartridge Number	New Stock Number	Astatic Needle Recommended
M-41-8	M-41-8	Cutting Needle*
M-41-500	M-41-500	Cutting Needle*
X-26	X-26	Cutting Needle*

ASTATIC REPLACEMENTS FOR OTHER CARTRIDGES

ACOS(Cosmocord)

Acos (Cosmocord) Model No.	Astatic Stock No.
HG-P59-1C	420-TS-TB
GP-13-6	18
GP-13-7	18

ADMIRAL

Admiral Model No.	Astatic Stock No.
A-1372	402
(33C25)	402
98A54-1	409
403B18	402
409A1	12-U
409A2	12-U
409A3	12-U
409A10	22
409A11	409
409A12	None
409A13	40-2
409A13-1	40-2
409A13-2	41-2 (if not available use 51-2)
409A14	40-2
409A15-1	None
409A15-2	None
409A16	40-2
409A17	41-2 (if not available use 51-2)
409A300	40-1
409A301	40-1
409B19-8	None
409B19-9	None
409B20	55-T or 81TB economy model
409B21	55-T or 81TB economy model
409B21-2	55-T or 81TB economy model
409B22-1	420-TS-TB
409B22-2	420-TS-TB
409B22-3	420-TS-TB
409B26	416-2
409B27	420-TS-TB
409B27-2	420-TS-TB
409C-35	13TB
409B29	420-TS-TB
409B30	89TB
0256	89TB

AMERICAN

American Model No.	Astatic Stock No.
B101B	51-1
B101C	51-1
B102B	51-2
B102C	51-2
B103B	51-2
B110C	55-T or 81TB economy model
B810C	81-TB
CR1	18
CR1A	18
CR2	12-U
CR2A	12-U
CR4	18
CR4A	18
CR5	408
CR5A	408
CR6	416-2
CR6A	416-2
CR7	40-2
CR7A	40-2
CR8	18
CR8A	18
PNM	51-2
PNMA	51-2
S1	416-2
S1A	416-2
S2	416-2
S2A	416-2
X101B	None
X105	None
X105B	40-1
X105C	40-1
X106B	416-2
X107B	40-2
X107C	40-2
X108	18
X109	18
X111B	414-1
X111C	414-1
X112B	66-2
X112C	66-2
X113B	66-3

ARGONNE

Argonne Model No.	Astatic Stock No.
AR-75	408
AR-77	18
AR-80	422-TS-TB
AR-81	420-TS-TB
AR-195	408

B. S. R. (COLLARO)

BSR Model No.	Astatic Stock No.
TC-8M	422-TS-TB
TC-8H	420-TS-TB
TC-8S	13-TB

CALRAD

Calrad Model No.	Astatic Stock No.
C10	18
CX308	420-TS-TB
CX309	414-1
CX310	408
LQD-2J	422-TS-TB
W-22	312-T
1SC-2	18

COLONIAL

Colonial Model No.	Astatic Stock No.
57577	430

ELECTRO-VOICE

E-V Model No.	Astatic Stock No.
H12	66-3
H12S	66-3
H-60	12
L-12	66-3
L-12S	66-3
M-12	66-3
M-12S	66-3
10	66-3
12	66-3
13	40-2
14	414-1
14-S	414-1
14-S4	414-1
16, 16T	None
26-ST	13-TB
26-DST	13-TBX
32	51-2
32-S	51-2
33	40-2
33-2	40-2
33-3	40-2
33-4	40-2
33-S	40-2
33-S2	40-2
33-S4E	40-2
34	40-1
34-S	40-1
42	51-2
43	51-2
44	51-1
46-T	41-T
47	55-T or 81TB economy model
50	12-U
51-1 (Red)	93T-1
52-2 (Green)	93T-2
53-3 (Black)	93T-3
56 (Blue)	93-T
56DS (Orange)	93-TX
60	16
60-H	16
61 with PFT3	11T7B
61D with PFT3	11T7BX
66 with PFT3	13TB
66DS with PFT3	13TBX
72	51-2
73	51-2
74	51-2
74-S	51-2
76 (White)	91-T
76DS (Pink)	91-TX
76-S	91-T
82-S	51-3
84-S	51-1
86-S	40-TB or 422-TS-TB economy model
86-T	89-TBX
86-TS	89-TB
96	40-TB or 422-TS-TB economy model
96-0	40-TB or 422-TS-TB economy model
96-0T	40-TB or 422-TS-TB economy model
96-T	40-TB or 422-TS-TB economy model
0132	51-2
0133	51-2
0134	51-1
0142	51-2
0143	51-2
0144	51-1
0146	41-TB or 81TB economy model
0146-0	41-TB or 81TB economy model
0146-S	41-TB or 81TB economy model
0196	41-TB or 81TB economy model
0196-0	41-TB or 81TB economy model
0196-S	41-TB or 81TB economy model
0256	89TB

JENSEN

Jensen Model No.	Astatic Stock No.
1	420-TS-TB
3	118-TS
13	12
19	62-1
22	405
28	62-T

MAGNAVOX

Magnavox Model No.	Astatic Stock No.
522468-3	420-TS-TB
560022	2
560037	2
560052-4	36 or 416-2 economy model
560133	55-T or 81TB economy model
560151	55-T or 81TB economy model
560161	55-T or 81TB economy model
560170	55-T or 81TB economy model
560176	420-TS-TB
560177	55-T or 81TB economy model
560188-1	55-T or 81TB economy model
560192	81-TB
560212-2	55-T or 81TB economy model
560214-2	89-TB
560192-1	89-TB
560215-2	89-TB

MISCELLANEOUS

Plug-in Type Cartridges: Having no model number or manufacturer's name.

Color	Astatic Stock No.
Red	93T-1 (Red Dot)
Green	93T-2 (Green Dot)
Black	93T-3 (Black Dot)
Blue	93T (Blue Dot)
Orange	93-TX (Orange Dot)
White	91-T (White Dot)
Pink	91-TX (Pink Dot)
Red-White	11T7B
Blue-White	13-TB
Blue-Yellow	13TBX

ORION

Orion Model No.	Astatic Stock No.
C-2	420-TS-TB
C-3	18
C-4	18

PHILCO

Philco Model No.	Astatic Stock No.
2550015	None
325-8004	66-TY
325-8008	40TB or 422TS-TB economy model
325-8009	414-1
325-8012	118TS
325-8014	120-TS
325-8016	89-TBX
325-8018	55T or 81-TB economy model
325-8021	120-TS
325-8024	None

ASTATIC REPLACEMENTS FOR OTHER CARTRIDGES

Philco Model No.	Astatic Stock No.
35-2643	12-U
35-2671	66-3
35-2671-1	66-3
35-2682	50-1
35-2690	12-U
35-2718	40-2
35-2739	66-TY
35-2739-1	66-TY
35-2743	40-TB or 422TS-TB economy model
35-2754	414-1
35-2754-1	414-1
35-2779	124-TS
35-2785	420TS-TB
35-2803	81-TB
35-2805	81-T
35-2806	120-TS
45-1609	50-1
45-1612	50-1
45-1844	12-U
45-9792	50-1
76-4053	50-1
4250011	None
4250012	40-TB or 422TS-TB economy model
4250013	66-TS
4250014	None
4250015	None
4250017	None

PHILMORE

Philmore Model No.	Astatic Stock No.
60L	408
1SC2	18

PRIMO

Primo Model No.	Astatic Stock No.
C-21	18
C-22	62-TY
C-25B	312-T
C-25C	422-TS-TB

R C A

RCA Model No.	Astatic Stock No.
83-1	83-1
83-1X	83-1X
S-5652	40-T or 312-T economy model
9890	403
9953	403
162A001	40-T or 312-T economy model
31050	401
33217	401
33905	401
34170	401
34225	401
34307	401
38453	403
38598	403
39550	403
39851	403
39919	403
55391	28
57330	None
70198	12-U
70220	28
70332	403
70338	403
70338-A	403
70339	403
70777	12-U
71173	51-2
72551	403
73839	36 or 416-2 economy model
74067	408
74625	408
74748	55-T or 81TB economy model
74984	51-1
75044	40-T or 312-T economy model
75475	410
75476	408
75575	408
75976	403
76257	42-1
76297	51-1
76318	408
77779	410
78478	41-T
78748	55-T or 81TB economy model
79791	51-1
79807	55-T or 81TB economy model
79850	12-U
79895	12-U
100329	55-T or 81TB economy model
100653	55-T or 81TB economy model
103238	62-1
941089-3	51-1
971569	62-1
973013-1	414-1
A-988370-1	42-1
988370-2	42-1
1401767	414-1
105836	81-T
RK223	81-TX
103238A	62-1
RMP-200-2	None
106770	13-TB
973054	83-1
A-140167-1	414-1

RONETTE

Ronette Model No.	Astatic Stock No.
DT-60	40-T or 312-T economy model
DT-60-OV	40-T or 312-T economy model
DT-60-P	40-T or 312-T economy model
DT-60-222	310-T
DT-60-US	310-T
OV-VM-6045	422-TS-TB
OV-VM-9120	64-TS
P-I-222	124-TS
P-VM-9234	None
RA-283-T	414-1
RA-284-OS	414-1
RA-284-OV	414-1
RA-284-P	None
RA-284-T	414-1
RA-284-US	414-1
RA-284-OV2	416-2
RA-395-1	414-1
RA-395-2	414-2
TO-222	420-TS-TB
TO-222-9655	64-TS
TO-284-MAX	420-TS-TB
TO-284-OV-9121	64-TS
TO-284-O	422-TS-TB
TO-284-OV-6045	422-TS-TB
TO-284-OV	422-TS-TB
TO-284-P-9234	None
TO-284-P	422-TS-TB
TO-284-T	420-TS-TB
TO-284-US	420-TS-TB
TO-284-V	420-TS-TB
TO-284-VS	420-TS-TB
TO-285-T	420-TS-TB
TX-88	None
MT-67-2	None
TO-395	420-TS-TB
TO-400-0	118-TS
T-400-OV	118-TS
T-400-P	118-TS
T-400-222	120-TS for VM Changer. For Ronette Arm or Philco Changer use 124-TS
T-222	124-TS
TO-222-A1	124-TS
TO-287-S	420-TS-TB
RA-395-1S	414-1
NE-395-S2	None

RYSTL-MR

Rystl-Mr. Model No.	Astatic Stock No.
MT-2HI	420-TS-TB
MT-2S	420-TS-TB
MT-2R	420-TS-TB
MS-2HI-FI	312-T
MS-2S	310-T
MS-2R	310-T
PS-1	18
PS-5	408

SHIELD

Shield Model No.	Astatic Stock No.
PC-21	312-T
PC-22	420-TS-TB
PC-13	416-2
PC-14	414-1
PC-15	310-T
PC-23	408
XC-50	18

SHURE

Shure Model No.	Astatic Stock No.
ML44	89-TB
ML44 (DS)	89-TBX
P7FVB	420TS-TB
P7FNB	420TS-TB
P7FWB	420TS-TB
P8FNB	420TS-TB
P8SNB	420TS-TB
P9FNB	420TS-TB
P9FJA	420TS-TB
P9FJB	420TS-TB
P9FJC	420TS-TB
P9FVA	420TS-TB
P9FVB	420TS-TB
P9FVC	420TS-TB
P9FWB	420TS-TB
P30	66-3
P30B	66-3
P30C	66-3
P30D	66-3
P30E	66-3
P30G	66-3
P30HS	66-3
P30S	66-3
P30W	66-3
P35	12-U
P35S	12-U
P37	66-3
P37A	66-2
P37C	66-2
P37CA	66-2
P70	416-2
P70A	416-2
P71	40-2
P71A	40-2
P71B	40-2
P71C	40-2
P71CA	40-2
P72	40-T or 312-T economy model
P72A	40-T or 312-T economy model
P72AF	40-T or 312-T economy model
P72AFT	40-TB or 422-TS-TB economy model
P72AFV	40-T or 312-T economy model
P72T	40-TB or 422-TS-TB economy model
P72V	40-T or 312-T economy model
P73	40-1
P73A	40-1
P73AR	40-1
P73R	40-1
P75	42-1
P75A	42-1
P76	40-T or 312-T economy model
P76A	40-T or 312-T economy model
P76AF	40-T or 312-T economy model
P76AFT	40-TB or 422-TS-TB economy model
P76AFV	40-T or 312-T economy model
P76AT	40-TB or 422-TS-TB economy model
P76AV	40-T or 312-T economy model
P76T	40-TB or 422-TS-TB economy model
P76V	40-T or 312-T economy model
P77	40-T or 312-T economy model
P77A	40-T or 312-T economy model
P77AT	40-TB or 422-TS-TB economy model
P77AV	40-T or 312-T economy model
P77T	40-TB or 422-TS-TB economy model
P77V	40-T or 312-T economy model
P79	40-T or 312-T economy model
P79T	40-TB or 422-TS-TB economy model
P80	42-1
P80RA	40-1
P81	40-2
P81A	40-2
P81AD	40-2
P81ADH	51-2
P81C	40-2
P81CA	40-2
P81D	40-2
P81E	40-2
P81R	40-1
P81RA	40-1
P85	416-2
P87	12-U
P87B	12-U
P87S	12-U
P88	12-U
P88S	12-U
P89	12-U
P89G	12-U
P89S	12-U
P90B	12-U
P90C	12-U
P90D	12-U
P90HS	12-U
P90S	12-U

ASTATIC REPLACEMENTS FOR OTHER CARTRIDGES

Shure Model No.	Astatic Stock No.
P92B	12-U
P93	12-U
P93B	12-U
P93C	12-U
P93D	12-U
P93E	12-U
P93MG	40-1
P93S	12-U
P94	12-U
P94B	12-U
P94E	12
P95MG	55-T or 81-TB economy model
PC2	55-T or 81-TB economy model
PC2FJA	55-T or 81-TB economy model
PC2FJB	55-T or 81-TB economy model
PC2FNA	55-T or 81-TB economy model
PC2NB	55-T or 81-TB economy model
PC2NC	55-T or 81-TB economy model
PC2SNA	55-T or 81-TB economy model
PC2SNC	55-T or 81-TB economy model
PC2SNE	81-TBX
PC2SVAM	81-TB
PC2SVB	81-TB
PC2SVE	81-TBX
PC2SVEM	81-TBX
PC4	55-T or 81-TB economy model
PC4FJA	55-T or 81-TB economy model
PC4SNA	55-T or 81-TB economy model
PC4SNE	81-TBX
PC6	89-TB
PC6SNE	89-TB
PC6SNA	89-TB
PC6SVA	89-TB
PC6SVE	89-TB
PC6SNAM	89-TB
PC6SNEM	89-TB
PC6SVAM	89-TB
PC6SVEM	89-TB
PC6FJA	89-TB
PC6FJE	89-TB
PC25NE	81-TBX
PC42D	None
PC7	55-T or 81-TB economy model
PC8	55-T or 81-TB economy model
PC9	51-2
PC10	51-2
PC11	51-1
PC12	51-2
PC13	51-1
PC13A	51-2
PC14	51-2
PC20A	None
PC30	51-2
PC40	41-T
PC40CT	41-TB or 81-TB economy model
PC40T	41-TB or 81-TB economy model
PC41	41-T
PC41AF	41-T
PC41AT	41-TB or 81-TB economy model
PC41D	None
PC41T	41-TB or 81-TB economy model
PC42AD	None
PC72V	41-T
PN30	51-2
PN30S	51-2
PN31S	51-2
PN88	51-2
PN88S	51-2
PN89	51-2
PN89D	51-2
PN89E	51-2

Shure Model No.	Astatic Stock No.
PN89S	51-2
PS20	420TS-TB
W7	420TS-TB
W9	420TS-TB
W21A	40-1
W21AR	40-1
W21E	42-1
W21F	42-1
W22A	40-T or 312-T economy model
W22AB	40-T or 312-T economy model
W22ABT	40-TB or 422-TS-TB economy model
W23	416-2
W23A	416-2
W23B	416-2
W26A	40-2
W26B	40-2
W31AR	414-1
W36B	66-2
W40A	12-U
W41A	12-U
W42A	12-U
W42B	12-U
W42BH	12-U
W42H	12
W53MG	22
W56A	12
W56N	None
W56PN	51-2
W56R	None
W57A	12-U
W57AN	66-3
W58A	12-U
W58HS	51-2
W59A	12-U
W60A	66-3
W60B	66-3
W60HS	12-U
W60PN	51-3
W61B	66-3
W65B	66-3
W65R	None
W66A	66-2
W66B	66-2
W68	66-3
W70	407
W72	66-TY
W78	12-U
WC-6	89-TB
WC-6TM	89-TB
WC10	55-T or 81-TB economy model
WC10D	81-TBX
WC20	None
WC22AB	41-T
WC22ABT	41-TB or 81-TB economy model
WC24	41-T
WC24T	41-TB or 81-TB economy model
WC25	None
WC31AR	51-1
WC33B	51-2
WC36B	51-2
WC38	51-2
WC60B	51-2
99-180	12-U
99-181	12-U
99-182	12-U

SILVERTONE

Silvertone Model No.	Astatic Stock No.
65100	430
65101	430

SONOTONE

Sonotone Model No.	Astatic Stock No.
9980	55-T or 81-TB economy model
9980-LB	53-T
9980-S	55-T or 81-TB economy model
9980-SLB	53-T
W7500	430
W7530	430
W7540	430
W7580	55-T or 81-TB economy model
W7590-1	51-1
W7590-2	51-2
W7590-3	51-2
W7590-LB	53-2
1P-1S	51-1
1P-2S	51-2
1P-3S	51-2
1P-LB-1S	53-2
1P-LB-2S	53-2
1P-LB-3S	53-2
2T	55-T or 81-TB economy model
2T-S	55-T or 81-TB economy model
2T-SD	81-TBX
2T-LB	53-T
2T-LB-S	53-T
3P-1S	51-1
3P-3S	51-2
3T-S	89-TB
3T-SD	89-TBX
4T-LB-S	81-TB
4T-LB-S1	None
4T-LB-S3	None
4T-LB-SD	81-TBX
4-TS	81-TB
4T-S1	None
4T-S3	None
4T-SD	81-TBX
7T-D	None
7T-LB-D	None
7T-LB-S	None
7T-LB-SD	None
7T-S	89-TB
7T-SD	89-TBX
8D	13-TB
8T4-D	None
8T4-S	13-TB
8T4-SD	13-TBX

TURNER

Turner Model No.	Astatic Stock No.
A	18
AU	12-U

VACO

Vaco Model No.	Astatic Stock No.
M50	18
S-45	18
T-45	420-TS-TB

V-M CORP.

V-M Model No.	Astatic Stock No.
649	12-U
649-D	12-U
649-E	12-U
649-H	12-U
649-J	66-3
649-L	66-3
1281	81-TB
1282	81-TB
2606	40-T or 312-T economy model
2753	62-TY
3063	40-T or 312-T economy model
3137	62-TY
3182	40-T or 312-T economy model
3368	420-TS-TB
3370	414-1
3411	40-2
3415	40-2
3442	40-T or 312-T economy model
3455	40-T or 312-T economy model
3500	414-1
3547	51-2
3553	420-TS-TB
3560	51-2
3579	66-2
3686	40-2
3691	40-T or 312-T economy model
3719	40-2
3749	66-2
4021	66-2
4099	40-2
4186	40-2
4254	41-T
4278	41-T
4918	40-T
4928	41-TB or 81-TB economy model
5172	66-TY
5403	40-T or 312-T economy model
5570	40-T or 312-T economy model
5573	40-2
5745	407
5866	407
6045	422-TS-TB
6115	66-TY
6344	16
6348	22
6394	55-T or 81-TB economy model
6649	66-2
6655	420TS-TB
6714	41-T
6751	66-TY
6981	41-TB or 81-TB economy model
7447-A	118-TS
7447-B	120-TS
7477	55-T or 81-TB economy model
7825	420-TS-TB
7949	66-TS
9004	64-TS
9121	64-TS
9138	55-T or 81-TB economy model
9138-E	55-T or 81-TB economy model
9168	64-TS
9234	None
9288	66-2
9590-A	310-TS
9655	64-TS
9930	414-1
14432	55-T or 81-TB economy model
14626	310-TS
14877	81-TB
14900	81-T
14918	310-2
15258-B	120-TS
16618	89-TX
16630	89-T
16633	81-TX
18444	314-TS
18464-A	81-TB
18464-C	89-TB
18464-D	89-TBX
18615-A	13-T
18615-B	13-TX

WEBCOR

Webcor Model No.	Astatic Stock No.
V42	8D Pickup

ASTATIC REPLACEMENTS FOR OTHER CARTRIDGES

Webcor Model No.	Astatic Stock No.
V45	8D Pickup
V47	8D Pickup
21P585	81-TB
21P586	13-T
21P587	13-TB
21P491	91-T
21P566	312-T
21P556	310-T
21P567	81-T
21P560	None
A1919	91-T

WEBSTER

Webster Model No.	Astatic Stock No.
AX	40-TB or 422-TS-TB economy model
A1	40-T or 312-T economy model
A1M	40-T or 312-T economy model
A1M-1	40-T or 312-T economy model
A1M-2	40-T or 312-T economy model
A1SM	424-TS
A1-8	40-T or 312-T economy model
A1M-8	40-T or 312-T economy model
A1-9	40-T or 312-T economy model
A2	40-1
A2-4	40-1
A2-8	40-1
A2M	40-1
A3	51-2
A3M	51-2
A4	51-2
A5	51-2
A5M	51-2
A560022A	2
A6	51-2
A6M	51-2
A7	424-TS
A7-1	424-TS
A7-5	424-TS
A7-8	424-TS
A7M	424-TS
A7M-1	424-TS
A7M-2	424-TS
A7M-5	424-TS
A7N-7	424-TS
A7SM-1	424-TS
A8	424-TS
A8M	424-TS
A8M-2	424-TS
A9	40-2
A9M	40-2
A9M-1	40-2
A9SM	40-2
A9-1	40-2
A10	424-TS
A10M	424-TS
A10M-2	424-TS
A11	40-T
A11-1	40-T
A11M	40-T
A12M-1	424-TS
AB1M	424-TS
AG1M	424-TS
AG7M	424-TS
AG8M	424-TS
AG9M	424-TS
AG10M	424-TS
AG11M	424-TS
A100	424-TS
A103	64-TS
A102	312-T
A104	422-TS
A160	422-TS

Webster Model No.	Astatic Stock No.
A200	424-TS
A201	424-TS
A203	426-TS
A204	426-TS
A205	424-TS
A206	424-TS
A250	424-TS
A251	424-TS
A260	420-TS
B1M	51-2
B2M	51-2
B100	120-TS
B102	120-TS
B200	120-TS
B200X	120-TS
B201	120-TS
B202	120-TS
B203	120-TS
B204	120-TS
B205	424-TS
B206	120-TS
B207	120-TS
B300	None
B301	None
B302	310-2
B303	None
BX	51-1
CX	407
C2	407
C2-1	407
C3	407
C4	407
C5	407
C6	407
C7	407
C7-1	407
C7-2	407
C7-3	407
C8	407
C8-1	407
C8-2	407
C8-5	407
C9	407
C9-1	407
C9-3	407
C9-4	407
C9X	407
C10	407
C10-1	407
C10-2	407
C10-5	407
C10-6	407
C10-8	407
C10-9	407
C10-10	407
C11	407
C11-1	407
C12	407
C14	407
C14-8	407
C15-4	407
C100	407
C100-1	407
C101	407
D2	2
D3	2
D3-2	2
D3-3	2
D3-4	2
D3-5	2
E4	12
E4-1	12
E9	12
FX	405
F1	12-U
F-25	66-TS
FP-3	12-U
F1P	12-U
F1P-1	12-U
F1P-2	12-U
F1P-3	12-U
F1P-4	12-U
F2	12-U
F2P	12-U
F2P-1	12-U

Webster Model No.	Astatic Stock No.
F2P-3	12-U
F3P	12
F4P	12
F5P	12
F6P	12
F7P	12-U
F7P-2	12
F9P	66-3
F10-1	12
F10P-1	22
F11	424-TS
F12	12-U
F12-1	12-U
F13	12-U
F13-1	12-U
F13-2	12-U
F13-3	12-U
F13M	12-U
F14	405
F14-1	405
F14-2	405
F14-4	405
F14M	405
F15	405
F15-1	405
F15M	405
F16	405
F16-1	405
F16M	405
F17P	405
F17P-1	405
F17P-2	405
F17P-3	405
F18	405
F18-1	405
F18-3	405
F18-4	405
F18-5	405
F18M	405
F19	405
F19-1	405
F20	405
F20-1	405
F20-2	405
F21	405
F21-3	405
F21-4	405
F22	406
F22-1	406
F23-3	406
F24-1	406
F25-66TS	66TS
F30	16
F30-1	16
F30-2	16
F30-3	16
F31-1	16
G1M	51-1
G2M	51-2
G3M	51-2
G4M	51-2
G4M-2	51-2
G5M	51-1
G5-1	51-1
G6M	51-2
GX	51-1
GX82	12-U
N1	12
N2	12
N3	12
N4	12
N5	12
N6	12-U
N6-1	12-U
N6P	12-U
N6P-1	12-U
N6P-2	12-U
N6P-3	12-U
N6P-4	12-U
N6P-5	12-U
N6P-6	12-U
N7	12-U
N7-1	12-U
N7-2	12-U
N7-3	12-U
N7-4	12-U

Webster Model No.	Astatic Stock No.
N7P	12-U
N7P-1	12-U
N7P-2	12-U
N7P-3	12-U
N8	12-U
N8-1	12-U
N8-2	12-U
N8P	12-U
N9	12-U
N10	12-U
N10-1	12-U
N10-2	12-U
N10-3	12-U
N10-4	12-U
N10-5	12-U
N10-6	12-U
N10-7	12-U
N10P	12
N10P-1	12
N10P-2	12
N10P-3	12
N10P-4	12
N10P-5	12
N10P-5S	12
N10P-6	12
N10P-7	12-U
N11	12
N11P	12
P1-1	12
P1-2	12
P1-3	12
P1-4	12
P1-5	12
P2-1	106
P2-2	106
P3-1	12
Q1	66-3
Q2	66-3
Q2-3	66-3
Q3	66-3
Q3-1	66-3
R1M	424TS
R2M	424TS
R3M	424TS
R4M-3	424TS
R4M-4	424TS
RG1M	424TS
RG2M	424TS
SC-TD	13-TBX
SC-1D	13-TBX
U200	16
U201	16
U202	16
U203	16
U204	16
U205	16
U206	16
U207	16
UX	407
V8-1	93-T
V8-1D	93-TX
V8-2	91-T
V8-2D	91-TX
V8-3	81-TB
V8-3D	81-TBX
W2	2
WS	12
WX	12-U
X82	12
X82CH-1	12
YN-1	51-3
YN-2	51-2
YN2-1	66-3
Y82	12-U
AJ1	None
AJ2	None
AJ3-1	None
AJ4	None
SGX	None
SPX	None
P1-8	12

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R.C.A. DUMONT LICENSED

BRAND NEW

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12LP4 ..... 11.60	16GP4: 17.50	17CGP4# 18.00	21AU/AVP4 ..... 21.00	21WP4 ..... 20.50
12UP4: 12.00	16JP4 ..... 13.00	17CP4: 20.50	21AWP4# 20.50	21MP4: 24.50
12VP4 ..... 12.00	16KP4 ..... 14.00	17GP4: 21.00	21BTP4# 22.00	21XP4 ..... 21.00
14AJP4# 14.00	16L/CP4 ..... 15.25	17HP4 ..... 17.50	21CBP4# 22.00	21YP4 ..... 21.00
14B/CP4 ..... 12.50	16W/YP4 ..... 15.25	17L/VP4 ..... 16.25	21CEP4# 22.00	21ZP4 ..... 20.50
14H/QP4 ..... 13.00	17AP4: 17.00	17QP4 ..... 15.75	21CQP4# 21.50	24C/VP4 ..... 26.25
14RP4 ..... 13.00	17AVP4 ..... 17.50	19AP4: 19.00	21CZP4# 21.50	24D/YP4 ..... 26.75
15D/AP4 ..... 12.50	17BP4 ..... 17.00	19D/FP4 ..... 16.50	21DAP4# 21.50	24AH/ALP4 ..... 27.75
16AP4: 16.50	17BNP4# 18.00	20CP4 ..... 17.50	21DEP4# 21.50	27EP4 ..... 43.50
16AEP4: 14.50	17BRP4# 18.00	20HP4 ..... 18.00	21DIP4# 22.00	27MP4: 59.50

#=aluminized only. Aluminization included in price.
:=metal tube
Aluminized glass tubes, not marked #, $2.00 extra.

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If tube is damaged in use or transit, internally or externally, return tube freight collect. Send note with freight receipt. We will ship replacement at once, freight prepaid. Fair enough?

SYLVANIA, PHILCO, C.B.S., TUNG-SOL, ELECTRON TUBES - R.C.A., G.E., RAYTHEON, WESTINGHOUSE

Original jobber-boxed. Price far below usual service company costs.

Shipment within 48 hours of receipt of order, from stock. Guarantee—E.I.A. standard guarantee (we know that your customers sometimes specify their favorite tube makers. Here they are — at far below your usual cost — reason: No middleman!)

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Type	Price
6BW4	.72
0Z4	.84
OZ4A	.84
OZ4G	.82
1A5GT	1.12
1A7GT	1.30
1AF4	1.56
1AX2	1.07
1C5GT	1.28
1DN5	.77
1G3GT	1.02
1G3GT/1B3GT	1.02
1H5GT	1.07
1J3	1.02
1K3	1.02
1L4	.93
1L6	1.23
1LA4	1.56
1LA6	1.44
1LB4	1.56
1LC5	1.42
1LC6	1.44
1LD5	1.49
1LE3	1.49
1LG5	1.42
1LH4	1.38
1LN5	1.38
1N2	1.12
1N5GT	1.82
1P5GT	1.23
1Q5GT	1.42
1R4/1294	1.31
1R5	.95
1S4	1.85
1S5	.93
1T4	.88
1U4	.82
1U5	.77
1U6	1.23
1V	1.28
1V2	.74
1X2B	1.07
2A3	2.21
2A6	1.28
2A7	1.28
2AF4B	1.42
2B3	1.02
2BN4A	.89
2CY5	.98
2EN5	.74
2ER5	.96
2FH5	.89
3A2	1.30
3A3	1.19
3AF4A	1.42
3AL5	.65
3AU6	.75
3AV6	.61
3B2	2.31
3B7	2.52
3BC5	.82
3BE6	.79
3BN4	.89
3BN6	1.07
3BU8	.98
3BY6	.82
3BZ6	.79
3CB6	.79
3CF6	.89
3CS6	.84
3CY5	.98
3D6	2.01
3DK6	.84
3DT6	.77
3EA5	.98
3LF4	1.47
3Q4	1.02
3Q5GT	1.26
3S4	.90
3V4	.88
4AU6	.77
4BC5	.82
4BC8	1.42
4BN6	1.07
4BQ7A	1.40
4BS8	1.35
4BU8	.98
4BZ6	.79
4BZ7	1.42
4CB6	.81
4CS6	.82
4DE6	.93
4DT6	.77
4EW6	.82
5AM8	1.16
5AN8	1.24
5AQ5	.77
5AS4A	.90
5AS8	1.19
5AT8	1.14
5AU4	1.19
5AV8	1.42
5AZ4	.93
5B8	1.44
5BE8	1.16
5BK7A	1.19
5BQ7A	1.40
5BR8	1.16
5BT8	1.16
5CG8	1.12
5CL8	1.10
5CL8A	1.10
5CM8	1.24
5CQ8	1.17
5CZ5	1.00
5EA8	1.10
5EU8	1.11
5FV8	1.10
5J6	.98
5T4	2.78
5T8	1.19
5U4GB	.74
5U8	1.16
5V3	1.35
5V4GA	1.23
5V6GT	.77
5X4G	1.03
5X8	1.14
5Y3GT	.61
5Y4GA	.82
5Z3	1.07
5Z4	1.73
6A7	1.63
6A8	1.84
6A8G	1.68
6A8GT	1.68
6AB4	.75
6AB7	1.93
6AC5GT	1.52
6AC7	1.70
6AD7G	2.07
6AF3	1.02
6AF4	1.40
6AF4A	1.40
6AF6G	1.28
6AG5	.98
6AG7	1.96
6AH4GT	1.63
6AH6	1.63
6AK5	1.47
6AK6	1.02
6AL5	.65
6AL7GT	1.91
6AM8	1.14
6AM8A	1.14
6AN4	1.73
6AN8	1.23
6AQ5	.81
6AQ5A	.81
6AQ6	.84
6AQ7GT	1.40
6AQ8	1.10
6AR5	.91
6AS5	.84
6AS8	1.17
6AT6	.67
6AT8	1.21
6AT8A	1.21
6AU4GTA	1.26
6AU5GT	1.51
6AU6	.74
6AU6A	.74
6AU8	1.23
6AU8A	1.23
6AV5GA	1.40
6AV6	.58
6AW8A	1.24
6AX4GT	.93
6AX4GTB	.93
6AX5GT	1.03
6AX8	1.30
6AZ8	1.47
6B8	1.80
6BA6	.70
6BA7	1.30
6BA8A	1.24
6BC5	.85
6BC7	1.33
6BC8	1.40
6BD5GT	1.70
6BD6	.85
6BE6	.77
6BF5	1.24
6BF6	.63
6BG6GA	2.28
6BH6	.95
6BH8	1.23
6BJ6	.91
6BJ7	1.11
6BJ8	.98
6BK4	2.49
6BK5	1.30
6BK7B	1.17
6BL4	2.28
6BL7GTA	1.38
6BN4A	.88
6BN6	1.05
6BN8	.95
6BQ5	.82
6BQ6GTA	1.52
6BQ6GTB/6CU6	1.52
6BQ7A	1.38
6BR8A	1.23
6BS8	1.31
6BU8	.98
6BW8	1.16
6BX7GT	1.40
6BY5GA	1.47
6BY6	.88
6BY8	.98
6BZ6	.79
6BZ7	1.40
6BZ8	1.56
6C4	.65
6C5	1.05
6C5GT	1.02
6C6	1.52
6C8G	1.79
6CA4	.68
6CA5	.87
6CB5A	2.63
6CB6A	.79
6CD6GA	2.03
6CE5	.82
6CF6	1.24
6CG7	.86
6CG8A	1.10
6CH8	1.26
6CK4	.98
6CL5	2.96
6CL6	1.31
6CL8	1.10
6CL8A	1.10
6CM6	.89
6CM7	.96
6CM8	1.24
6CN7	.98
6CQ8	1.16
6CR6	.84
6CS6	.82
6CS7	1.03
6CU5	.82
6CU6	1.52
6CU8	1.28
6CX8	1.28
6CY5	.96
6CY7	1.03
6CZ5	.98
6D6	1.52
6DA4	.95
6DB5	1.03
6DC6	.96
6DE4	.98
6DE6	.86
6DE7	1.03
6DG6GT	.87
6DK6	.82
6DN6	2.31
6DN7	1.23
6DQ5	2.68
6DQ6A	1.44
6DQ6B	1.44
6DR7	1.03
6DS5	.93
6DT5	1.07
6DT6	.75
6DT8	1.31
6DW5	1.12
6E5	1.05
6EA5	.98
6EA7	1.21
6EA8	1.10
6EB5	1.02
6EB8	1.30
6EH8	1.10
6EM5	1.07
6EM7	1.28
6ER5	1.05
6ES5	1.03
6EV5	1.05
6EU8	1.11
6EW6	.81
6EZ8	1.33
6F5	1.19
6F5GT	1.09
6F6	1.40
6F6G	1.28
6F6GT	1.28
6FH5	.87
6FM8	1.05
6FV6	.98
6FV8	1.10
6GH8	1.10
6GN8	1.30
6H6	1.16
6J5	1.09
6J5GT	.96
6J6	.98
6J6A	.98
6J7	1.52
6J7GT	1.40
6K6GT	.88
6K7	1.45
6K7G	1.33
6K7GT	1.33
6K8	1.56
6L6	2.35
6L6GB	1.47
6L7	1.68
6L7G	1.52
6N7	1.51
6N7GT	1.52
6P5GT	.98
6Q7	1.30
6Q7G	1.12
6Q7GT	1.12
6R7	1.38
6S4A	.72
6S7	1.61
6SA7	1.30
6SA7GT	1.30
6SB7Y	1.75
6SC7	1.28
6SF5	1.03
6SF7	1.51
6SG7	1.42
6SH7	1.35
6SJ7	1.27
6SJ7GT	1.30
6SK7	1.26
6SK7GT	1.26
6SL7GT	1.23
6SN7GTB	.91
6SQ7	1.10
6SQ7GT	1.05
6SR7	1.03
6SS7	1.35
6T4	1.59
6T8	1.17
6T8A	1.17
6U5	1.10
6U8A	1.16
6V3A	1.59
6V6	1.68
6V6GT	.75
6V6GTA	.77
6V8	1.44
6W4GT	.84
6W6GT	.98
6X4	.58
6X5GT	.72
6X8	1.10
6Y6GA	1.21
7A4/XXL	1.14
7A5	1.35
7A6	1.10
7A7	1.23
7A8	1.65
7AD7	2.26
7AF7	1.35
7AG7	1.35
7AH7	1.35
7AU7	.91
7B4	1.07
7B5	1.66
7B6	1.14
7B7	1.23
7B8	1.24
7C4	1.75
7C5	1.23
7C6	1.23
7C7	1.12
7E5	1.42
7E6	1.42
7E7	1.56
7F7	1.35
7F8	1.61
7G7	1.40
7H7	1.37
7J7	1.80
7K7	1.56
7L7	1.49
7N7	1.24
7Q7	1.44
7R7	1.80
7S7	1.66
7V7	1.72
7W7	1.66
7X6	1.16
7X7	2.05
7Y4	1.03
7Z4	.96
8AU8	1.24
8AW8A	1.28
8BA8A	1.28
8BH8	1.24
8BN8	1.03
8BQ5	.84
8CG7	.87
8CM7	.98
8CN7	.91
8CS7	1.03
8CX8	1.30
8EB8	1.31
8ET7	1.28
8GN8	1.31
8SN7GTB	.93
9AU7	.98
9BR7	.96
9CL8	1.10
9U8A	1.16
10C8	1.49
10DE7	1.03
10EG7	1.10
11CY7	1.05
12A6	1.66
12A8G	1.66
12A8GT	1.66
12AB5	.86
12AC6	.77
12AD6	.81
12AE6	.70
12AE6A	.70
12AE7	1.31
12AF3	.98
12AF6	.82
12AJ6	.70
12AL5	.67
12AL8	1.38
12AQ5	.84
12AT6	.58
12AT7	1.07
12AU6	.75
12AU7	.86
12AU7A	.86
12AV5GA	1.35
12AV6	.58
12AV7	1.17
12AX4GTA	.95
12AX7	1.24
12AZ7A	.96
12B4A	.95
12BA6	.70
12BA7	1.38
12BD6	.85
12BE6	.75
12BF6	.72
12BH7A	1.07
12BK5	1.40
12BL6	.81
12BQ6GTA	1.58
12BR7	1.02
12BV7	1.07
12BW4	.61
12BY7A	1.07
12BZ7	1.07
12C5/12CU5	.81
12C8	2.00
12CA5	.87
12CN5	.86
12CR6	.84
12CS6	.77
12CU6	1.56
12CX6	.87
12D4	.96
12DB5	.96
12DL8	1.23
12DQ6A	1.47
12DQ7	1.16
12DS7	1.16
12DT5	1.07
12DT8	1.31
12DU7	1.17
12DV7	1.03
12DV8	1.23
12DW7	.98
12DY8	1.24
12DZ6	.87
12EA6	.91
12EC8	1.16
12ED5	.87
12EG6	.81
12EK6	.87
12EL6	.70
12EM6	1.10
12EN6	1.07
12F8	.96
12FK6	.70
12FM6	.65
12H6	1.07
12J5GT	.95
12J7GT	1.47
12J8	1.16
12K5	1.03
12K7GT	1.42
12K8	1.84
12L6GT	.86
12Q7GT	1.17
12R5	.91
12SA7	1.30
12SA7GT	1.14
12SC7	1.28
12SF5	1.07
12SF5GT	1.10
12SF7	1.52
12SG7	1.42
12SH7	1.40
12SJ7	1.30
12SJ7GT	1.12
12SK7	1.26
12SK7GT	1.26
12SL7GT	1.31
12SN7GT	.95
12SN7GTA	.95
12SQ7	1.16
12SQ7GT	1.01
12SR7	1.07
12U7	.93
12V6GT	.75
12W6GT	1.05
12X4	.67
12Z3	1.23
13DE7	1.03
13DR7	1.03
14A4	1.38
14A5	2.05
14A7	1.28
14AF7	1.33
14B6	1.23
14B8	1.26
14C5	1.42
14C7	1.17
14E6	1.38
14F7	1.42
14F8	1.61
14H7	1.44
14J7	1.79
14N7	1.33
14Q7	1.44
14R7	1.87
14S7	1.68
14W7	1.66
14X7	1.33
14Y4	1.23
17AV5GA	1.35
17AX4GT	.95
17C5	.82
17D4	.96
17DE4	1.00
17DQ6A	1.47
17H3	.75
17R5	.91
18A5	1.44
18FW6	.70
18FX6	.75
18FY6	.58
19AU4	1.21
19AU4GTA	1.21
19BG6GA	2.28
19C8	1.56
19EA8	1.11
19J6	1.10
19T8	1.17
19V8	1.42
22DE4	1.00
24A	1.45
25AV5GA	1.44
25AX4GT	1.02
25BK5	1.28
25BQ6GT	1.61
25C5	.75
25CA5	.87
25CD6GB	2.05
25DN6	1.94
25EH5	.81
25F5	.82
25L6GT	.79
25W4GT	.95
25Z5	1.02
25Z6GT	1.02
26	1.52
27	1.52
32ET5	.77
35/51	1.52
35A5	1.23
35B5	.93
35C5	.75
35L6GT	.84
35W4	.49
35Y4	1.05
35Z3	.96
35Z4GT	.82
35Z5GT	.65
36	1.52
36AM3	.53
37	1.33
39/44	1.52
40A1	1.56
40B2	1.56
41	1.23
42	1.23
43	1.66
46	1.63
47	3.05
50A1	1.82
50A5	1.45
50B5	.93
50C5	.75
50DC4	.53
50EH5	.81
50L6GT	.84
50X6	1.12
50Y6GT	1.03
50Y7GT	1.07
55	1.52
70L7GT	3.55
71A	1.79
75	1.79
78	1.79
80	1.02
83	1.23
84	.91
117L7MGT	3.55
117Z3	.87
117Z6GT	1.54
5642	1.73
6973	1.56
7025	1.02
7199	1.14
7543	.77

X155 See 6BZ8
XXD Order 14AF7
XXFM Order 7X7
XXL Order 7A4

TERMS: prepaid orders shipped freight-free.
25% deposit on C.O.D.'s, buyer pays postage, F.O.B., New Jersey

Please order these tubes on your own order form, to avoid confusion. Please do not specify a particular brand. We can ship any order, in full, at once, but may be out of a specific type in a specific brand for a while.

COMMONLY USED PARTS AT UNCOMMONLY LOW PRICES...

PORTABLE RADIO BATTERIES

Fresh — 20% Longer Life
Imports
Far, far less in price!

EVEREADY EQUIVALENT NO.		
#216	9 volt	59¢
#226	9 volt	59¢
#415	45 volt	1.19
#416	67.5 volt	1.39
#457	67.5 volt	1.49
#467	67.5 volt	$1.49
#477	67.5 volt	1.39

6 Ft. Zipp Cord, with plug, rubber covered 20¢

6 Ft. T.V. Cheeter Cord, rubber covered 20¢

TUBE CARTON STACKER CONTAINERS HOLD 5 TUBE CARTONS EACH. WHITE, NON-SKID PAPER — MINIATURE SIZE — 3.00 per 100. GT SIZE (6SN7 etc.) — 4.00 per 100. Large GT SIZE (5U4GB, etc.) — 8.00 per 100. G SIZE (6BG6G etc.) — 10.00 per 100.

AUDIO OUTPUT XFMR

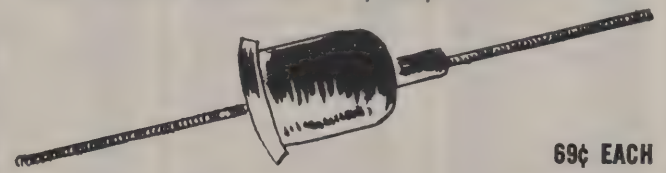
6V6, Push Pull, Webcor #67P953 Excell. Output with Feed Back Taps for Cathode Feed Back. ..... Special 79¢ ea.

45 RPM SPINDLE

— Fits Monarch UA8 Record Changer. In original package. ..... A fine value at $1.25

Terms same as "ARCTURUS" receiving tubes NO BONUS CREDIT GIVEN WITH MATERIAL ON THIS PAGE

SILICON RECTIFIERS—500 ma. 450 p.i.v., tested, guaranteed. Replaces any SELENIUM power supply in TV or radio. Product of a famous maker. QUANTITY BUYERS write for special price.

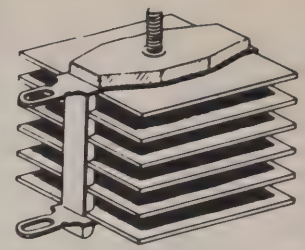


69¢ EACH

SELENIUM RECTIFIERS

New, tested guaranteed. 1st grade. FAMOUS MAKER.
OBSOLESCENCE PRICED!

65 ma.	.29	300 ma.	.59
75 ma.	.34	350 ma.	.69
100 ma.	.39	400 ma.	.74
150 ma.	.44	450 ma.	.79
200 ma.	.49	500 ma.	.89
250 ma.	.54		



TUBE CARTONS — 2 color, non-skid surface, with divider. 100 lots only. Avoid tube breakage. Keep these around.

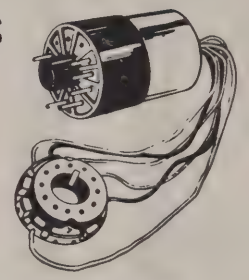
Miniature size	$1.25 per 100
GT Size (6SN7, etc)	1.60 per 100
Large GT Size (5U4GB, etc.)	2.00 per 100
G Size (6BG6G, etc.)	2.50 per 100

PICTURE TUBE BRIGHTENERS

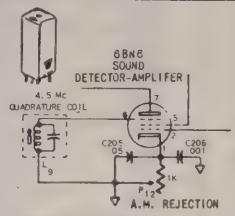
pitched, tested, guaranteed 1 year.

5 wire parallel	$ .59
6 wire parallel	.69
6 wire Universal series	.80
Universal series or parallel	1.19
110° Universal series or parallel	1.39

Lowest Prices Anywhere!



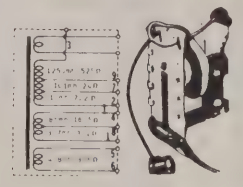
QUADRATURE COIL



A STANDARD TWO LUG QUADRATURE CAN

Used with 6BN6, 2BN6 and other tube types. Clip mount.— Is used in Teletone, Teleking, Video Products and others. Exact electrical characteristics for Crosley Quad. coil in Super "V" models. Mount with bracket if used in sets that do not use can but only coil. Use same can where 2 lug 4.5 Mc sound take-off is required, eg: C.B.S., Hyde Park, Silvertone etc. Can will also replace any 4.5 Mc sound trap 39¢ EACH

CBS



HIGH VOLTAGE TRANSFORMER
C.B.S. 12001101

Also same part 12000751. Equiv. Merit HVO 79 and RAM X-143, also Stancor HO-258. In C.B.S. models 922 series flyback may have C.B.S. part #12000151 marking. All 3 C.B.S. part nos. mentioned above are same. Pins #5 and #6 used for AGC or AFC in some models. Induct. values and separate AGC taps make it possible to use this unit for replacement in sets like Philharmonic, AMC, Silvertone and many others requiring auto H.V.O. with AGC taps. $1.59 EACH

FLYBACK XFMRS AT FRACTIONAL PRICES

DUMONT High Voltage Flyback #20008061, EXACT Replace RCA 225TI, Merit H.V.O.-47, and RAM XO-74 Used in many popular sets
$1.29 EACH

FLYBACK TRANSF. RCA #972945 comes complete with H.V. Rect. socket, used in RCA models KCS 100-D Portables **Special $2.29 ea.**

WESTINGHOUSE FLYBACK TRANSF. #V-14346, used in models V2310, V2313 Equiv. Ram-X-127 Thord. Fly 73
Cost $2.69

PACKARD-BELL H.V. Fly Back Equiv. to Thordarson Fly 100 — Popular type used in model 17VK1 and others.
Only $2.29 ea.

UNIVERSAL 90 DEGREE YOKE Complete w/leads and network 19 Mh. Horiz. and 43 Mh. vert. Equiv. Merit MDF 92. and Ram 90F19/43. **Only $2.39 each**

UNIVERSAL 90 DEGREE YOKE Complete with leads and network 12 Mh. Horiz. and 47 Mh. vert. Equiv. Merit MDF 91 Ram 90F12/47. **Only $2.49 each**

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#6146	—	2.95	Arcturus Brand	#923	—	1.00	J.A.N.	5948/1754	—	100.00	Jan.
#6C21	—	7.50	Jan.	#6AR6	—	.75	Arcturus Brand	Sal 39	—	300.00	Jan.
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EIT/6070	7.95	1P25A	9.00	2J51	45.00	3N21	10.00	C6A	3.50
BL2	9.50	1P29	1.50	2J51A	150.00	3N25	15.00	C6J	15.00
BL11/6282	85.00	1P30	1.00	2J51B	200.00	3N27	10.00	6AD7G	.90
BR	1.00	1P32	1.50	2J54	39.50	3X2500A3	120.00	6AJ6	1.00
OA2	.70	1P37	2.00	2J56	35.00	4-65A	13.50	6AK4	.90
OA2WA	1.60	1P39	1.00	2J56A	65.00	4-125A	25.00	6AL5W	.60
OB2WA	1.50	1P41	1.75	2J61	15.00	4-250A	30.00	6AN5	1.90
OA3/VR75	.85	1Q22	14.50	2J61A	35.00	4-400A	35.00	6AQ5W/6005	1.20
OA4G	1.00	1Q26	50.00	2J62	15.00	4-750A	72.50	6AU6WA/6136	1.50
OB2	.45	1Z2	1.40	2K22	18.00	4-1000A	80.00	6AS6W	1.50
OB2WA	1.50	2-01C	17.25	2K23	15.00	4B22/EL5B	3.00	6AS7G	3.00
OB3/VR90	.80	2B22	1.50	2K25	8.00	4B25/6CF	2.50	6BA6W	1.00
OC3/VR105	.45	2C4	.75	2K26	30.00	4B26	4.00	6BF7W	2.00
OC3W	2.50	2C35	1.90	2K28	24.00	4B27	4.50	6BL6	25.00
OD3/VR150	.45	2C36	29.00	2K29	35.00	4B28	3.50	6BM6	30.00
OD3W	2.00	2C38	15.00	2K30	80.00	4B31	17.00	6CF/4B25	2.50
C1B/3C31	2.75	2C39	5.00	2K34	80.00	4B32	8.00	6C22	25.00
VG1A	12.50	2C39A	11.00	2K39	100.00	4B35	5.00	6D4	1.00
1B23	2.00	2C39B	22.50	2K41	85.00	4C21	8.00	6F4	2.50
1B24	6.00	2C40	8.00	2K45	22.50	4C27/CV92	5.00	6H6WGT	2.50
1B24A	10.00	2C42	3.50	2K50	50.00	4C28	15.00	6J4	1.00
1B25	1.25	2C43	6.50	2K54	15.00	4C35	15.00	6J4WA	2.00
1B26	.60	2C46	4.75	2K55	20.00	4CX5000A	375.00	6K4	2.00
1B27	9.00	2C51	2.50	03G	3.00	4D21/4-125A	26.00	6L6WGA/5932	2.50
1B29	2.50	2C52	2.25	C3R14	12.00	4E27	8.50	6L6WGB/5881	2.95
1B35	3.00	2C53	9.00	3B4	2.00	4E27A/5-125B	33.00	C6L/5528	4.00
1B35A	4.50	2D21	.65	3B21	1.50	4J21	45.00	C6M	15.00
1B36	4.50	2D21W	1.00	3B23	3.00	4J26	40.00	6SK7WA	1.50
1B37	1.75	2D29	.60	3B24W	2.50	4J36	30.00	6SL7WGT	1.00
1B38	20.00	2E22	3.50	3B24WA	6.00	4J37	30.00	6SN7WGT	.90
1B40	1.00	2E24	2.25	3B25	2.50	4J50	90.00	6SU7GTY	1.00
1B41	37.50	2E25	2.50	3B26	2.40	4J52	20.00	6X4W	1.00
1B42	4.00	2E25A	2.00	3B27	3.00	4J61	95.00	6X4WA	1.50
1B43	4.00	2E26	3.25	3B28	2.75	4J62	95.00	BS-7	10.00
1B45	4.00	2E30	2.25	3B29	5.00	4PR60A (bulk)	25.00	TD-7	3.00
1B46	4.95	2E35	1.85	3C22	35.00	4PR60A	50.00	7C23	55.00
1B47	2.50	2E43	1.50	3C23	5.00	4X150A	12.00	CE-7C25	160.00
1B48	2.50	2G21	1.50	3C24	3.95	4X150G	25.00	VX-10	6.95
1B53	10.00	2E43	1.50	3C27	4.00	4X250B	40.00	SA10B/5959	13.00
1B56	14.50	2H21	65.00	3C30	2.50	VT5/215A	3.00	12AT7WA/6201	1.30
1B59/R1130B	9.50	2J21	3.00	3C31/C1B	2.75	ELC5B	1.50	12AU7W/6189	1.40
1B62	5.00	2J21A	4.00	3C33	4.50	5B/4B22	3.00	BL-11	8.50
1B63A	9.00	2J22	4.00	3C37	12.00	5B24/45X674	3.00	SMC-11A	495.00
1B63A/6232	18.50	2J26	5.00	3C45	4.00	5C22	19.00	15E	1.85
1B85	7.00	2J31	14.00	3D21A	5.00	5D21	9.00	FG-17	5.50
ELC1K	8.00	2J32	22.00	3D23	3.50	5D22	30.00	DL-17	8.00
1C21	2.25	2J34	14.00	3E29	5.90	5J23	30.00	T20	1.80
1D21/SN4	5.00	2J36	25.00	EM3GA	32.50	5J26	60.00	KY21A	22.00
GL-1L24	15.00	2J37	15.00	3-150A3	12.50	5J29	8.00	T21	1.50
GL-1L36	6.00	2J40	15.00	3J30	10.00	5J30/Z666	4.50	PJ21/5743	5.00
1P21	24.00	2J48	25.00	3K21	120.00	5R4GY	1.15	RK-21	1.00
1P23	1.50	2J49	30.00	3K22	120.00	5R4WGA	4.00	RX21A	22.00
1P24	1.00	2J50	30.00	3K20000LK	500.00	5R4WGY	3.00	CE-22C	2.50

PJ23/868	2.50	EM85	.95	RX232	1.00
RK-23	1.25	90NB	10.00	ML236-A	75.00
HK-24	1.45	HD94	1.00	2-240A	40.00
24G/3C24	3.95	FG-95	25.00	WE245A	3.50
RK25	2.25	FG98A	25.00	246A	4.00
25T	13.00	100R	3.50	249C	5.00
RK25	2.25	C100E	1.00	250TH	21.00
BL-26	10.00	101-D	2.00	250TL	15.00
FG27A	8.95	101-F	2.00	251A	35.00
RK28A	9.50	102-F	2.00	HK253	7.00
28D7W	1.75	104-A	3.00	253A	3.00
CE29	1.00	104-D	2.00	253C	6.50
FG32	8.50	FG104	15.00	HK257B	12.50
VX33A/5801	3.50	FG-105	30.00	259A	2.50
EL34/6CA7	2.90	115A	7.00	262-B	2.00
35TG	1.50	BK-120	2.50	FP-265	6.00
CE-36C	1.00	120NB	20.00	266B	20.00
E37/5957	22.00	WE121A	1.25	266P	20.00
CC-40	1.50	WE121B	2.00	FG-271	45.00
HY40Z	6.00	WE122A	1.50	275A	3.50
E41/5959	13.00	WE122B	5.00	FG280	25.00
FG41	60.00	WE123A	4.00	282B	2.50
ML-41	Q	F123A	10.00	283A	3.00
W41	65.00	F127A	7.00	285A	5.00
V45	100.00	F128A	7.00	287A	2.50
45X674	3.00	VT127A	2.50	QK288	70.00
RK49	2.00	VXR-130	1.50	293A	4.00
EF50	2.00	HK153	7.00	294A	3.50
UH50	4.95	FG-154	8.00	GL-299	2.00
50-T	5.00	QK-155	90.00	301A	4.50
53A	1.00	PL-R-161	18.50	300B	5.50
HK54	3.50	FG-166	6.00	CE305	2.00
VR-57	1.00	VT166/371B	2.50	WE305A	2.50
FG-57	5.00	FG-172	17.00	306A	1.00
RK59	.85	PL-172	115.00	308B	9.00
QK60	14.00	FG178 (DGO178)	6.00	310A	4.50
RK-60/1641	1.20	QK181	20.00	310B	5.00
K61-A	1.00	FG190	2.90	311C	1.35
QK61	25.00	QK-202	100.00	311CT	5.00
QK62	14.00	203A	2.00	313C	1.00
RK62	1.00	204A	7.75	313CD	2.50
RK-63	15.00	WE205B/VT2	.90	QK319	85.00
HY65	.75	WE205F	2.75	323B	8.50
KT-66	3.25	CE205	3.00	326A Dumont	17.00
FG67	4.00	CE206	2.50	332A	12.00
BL69	8.50	BS213/6108	2.00	336A	2.75
BL-70	8.50	RX215	5.00	337-A	2.75
75T	9.50	217A	7.00	QK338/6410	200.00
75TH	22.00	217C	1.50	337A	3.95
75TL	22.00	218	10.00	338A	6.50
BL-77	7.00	221A	.85	339A	5.95
FG-81A	6.00	VT227A	2.50	S340/5960	30.00
E83F	1.50	WE231D	1.00	348A	3.50

No Bonus credit given with these tubes. Guarantee — 30 days from delivery date, under normal use conditions. Some items listed above cannot be replaced, once sold. Purchaser will be notified at once. Prices subject to change.

Remember — Arcturus offers your money back, if you are dissatisfied with our products for ANY reason—or NO reason!

• R.C.A. • SPECIAL PURPOSE • INDUSTRIAL • WESTINGHOUSE • G.E. • EIMAC

349A 2.50	438A/2K56 60.00	719A 9.00	932 2.00	5588/6161 35.00	5751 2.35	5960/S340 30.00	6186/6AG5WA 1.50
350A 1.70	443A 5.00	721B 5.75	935 4.50	5590/401A 1.10	5755/420A 4.50	5965 .75	6189 1.40
350B 1.20	446B 1.00	723A/B 4.00	953-B 5.00	5591/403B 3.50	5763 2.00	5977 1.50	6197 2.20
351A 10.00	GL451 3.95	725A 9.00	959 1.00	GL5610 .75	5765 40.00	5981/5650 29.00	6199 24.00
354A 5.00	WL456 55.00	726A 3.00	1223 .80	5633 2.50	5783WB 4.95	5987/SC968B 3.50	6198 100.00
355A 12.00	460 8.00	726B 5.00	1224 .80	5634 2.50	5784 2.50	5995/TE10 3.50	6201 1.30
WL-356 275.00	464A 1.50	726C 12.00	1237 3.00	5636 2.00	5784WA 3.00	5993/TE10 5.00	6203 2.25
357A 22.50	GL471A 2.00	730A 7.00	1273 .80	5636A 1.50	5787 3.25	5996 90.00	6206 2.50
QK-358 475.00	481 2.50	BL800 40.00	1274 .80	5637 1.75	5787WA 3.50	HD6001 1.50	6232 7.50
367-A 2.25	484 2.50	BL803 40.00	1280 .75	5638 1.75	5789 95.00	6005/6AQ5W 1.20	6252/AX9910 20.00
F369 40.00	S-491N 1.50	804 Q	1285 1.00	5639A 2.00	5792 7.50	HD6008 1.50	6260 6.50
371-B/VT166 2.50	CK501LX .50	805 4.50	HY1269 2.00	5641 2.00	5793 6.00	6012 (RCA) 5.50	6263 9.00
373-A 3.50	GL-502 1.50	806 7.00	DG1290 2.90	5642 2.25	5794 2.00	6014/C1K 9.50	6264 9.00
374-A .90	RH-507 16.00	807 1.10	K1304P7 29.00	5643 4.95	GL5798 3.00	6019 150.00	6278/C5F14 11.00
375-A 6.00	WL-530 15.00	807W/5933 2.50	1603 3.50	5644 4.00	5800 6.00	6021 1.50	6288 5.50
F375-A 4.00	WL-531 4.50	808 .90	1609 2.75	5645 2.50	5800/VX41 6.00	6028 1.75	6308 6.00
386-A 12.50	GL-546/5663 2.00	809 3.00	1610 2.50	5646 2.00	5802 3.00	CK6029 4.00	NU6324 110.00
387-A 2.50	GL567A 55.00	810 25.55	1611 1.00	5647 4.00	5812 1.50	6032 15.00	6385 11.00
ATR387A 8.50	575-A 21.00	811 2.75	1612 3.95	5650/5981 29.00	5814 .70	6038 (TR) 2.50	6410/QK338 200.00
388A .80	CE-576A 18.00	811A 4.00	1613 1.00	5651 .95	5814A 1.40	6044 5.00	6417 2.00
393A 3.65	UE576 18.00	812A 6.50	1614 (CBS) 2.95	5656 3.00	5814WA 2.00	6050 1.40	6485 2.00
394A 2.50	UE577 10.00	813 10.00	1622 1.50	5657 150.00	5819 35.00	6070/EIT 7.95	6517/QK358 475.00
395A 2.75	UE578 9.00	814 5.00	1624 1.90	5667 75.00	5829 1.75	6072 1.50	6521 (RCA) 300.00
396A 1.50	WL579B 15.00	815 3.00	1632 .50	5663 1.25	5829WA 1.50	6073 .90	6539 7.00
398A/5603 4.00	NL-600 9.00	816 1.80	1634 .65	5670 1.25	5830/FG41 40.00	6080 3.00	6542 7.00
399A 2.50	GL-605 50.00	829B 7.00	1635 1.75	5670WA 1.65	5838 6.50	6089 50.00	6539 9.00
FP400 40.00	KU-610 6.00	832 3.75	1641 1.00	5674 75.00	5839 4.00	6095 1.20	6542 Q
400A 1.00	KU-627 6.00	832A 7.00	1654 1.35	5676 1.25	5840 1.65	6097 .60	PL-6549 22.50
401A/5590 1.10	KX642 7.50	834 3.50	1656 1.00	5678 1.10	5840A 1.75	6099 .90	6550 4.20
403A .75	648-P1 6.50	836 1.65	1659 1.25	5687 1.10	5841 2.75	6100 1.00	UX6653 6.00
403B/5591 3.50	651/656/5552 75.00	837 .90	1665 1.50	5687WA 2.95	5842/417A 9.00	6101 1.00	6655 39.95
BS404/6109 2.00	652/5551/	838 1.00	1680 2.50	5692 3.25	5844 .65	6106 1.00	6661/6BH6 .95
404A/5847 7.00	FG271 30.00	860 4.50	1698/6285 .30	5693 3.50	5847/404A 7.00	6107 2.00	6663/6AL5 .80
ATR407 25.00	653B/5555 125.00	866A 1.90	1851 .80	CK-5694 3.50	5852 2.00	6108/BS213 2.00	6679/12AT7 1.30
407A 2.95	HK654 10.00	866JR 1.85	1852 .65	5696 .85	NU5857 12.00	6109/BS404 2.00	6680/12AU7 1.10
408A 1.75	F660 80.00	868/PJ23 2.50	1853 .85	CK-5697 2.95	5863 33.00	6110 3.50	6681/12AX7 1.20
409A 1.50	Z666/5J30 4.50	869B 40.00	2013/6211 .50	5702WA 2.00	5875 1.00	6111 2.25	6883 3.95
410A/2K30 80.00	673 19.00	872-A 2.75	2050 1.20	5703 1.00	5881 2.75	6113 1.75	7025 1.15
412A 1.50	GL678 35.00	878 .90	2050W 2.10	5703WA 3.00	5883 8.00	6116 40.00	8001/4E27 7.50
415A 3.00	ZP679 29.00	885 .90	2051 .75	5704 1.00	5890 20.00	CK-6121 2.50	8002R 12.00
416B 23.00	702B 2.00	889RA/5667 75.00	ZB3200 100.00	5718 1.00	5894 15.00	6130 4.00	8008 8.00
417A Klystron 5.00	706 CY, DY, EY 12.00	891 100.00	R4330 7.50	5719 1.00	5896 .80	6130/KU42 6.00	8012A 2.00
417A/5842 9.00	706A, B, C, or D 10.00	902PI 3.95	R4340 9.00		5899 2.25	6136 .95	8013 2.00
418A 9.00	706GY 12.00	UE905 4.50	VX5027/VX9005 55.00	5726 .70	5906 5.00	6140/423A 4.00	8013A 4.00
420A/5755 4.50	707A 2.00	908 Q	5516 7.50	5726/6AL5W .95	5906SL 3.00	6141/427A 3.00	8014A 35.00
421A 2.50	707B 2.75	917 1.00	5517 .70	5727/2D21W 1.50	5915A 1.10	6145 3.00	8016 1.10
422A 8.00	709A .70	918 .85	5528/C6L 4.00	5736 Q	5930/2A3W 4.00		8020 5.00
423A/6140 4.00	710A 5.50	919 1.10	5551 45.00	CE-5736 160.00	5931 2.25	6147 2.50	9003 1.15
427A 3.00	714A 8.50	920 1.85	5552A 85.00	5743/PJ21 5.00	5932 2.00	6161 25.00	9005 3.00
429A 6.00	714AY 12.50		5557/FG17 5.50	5744 .80	5933 2.50	6163 11.00	
432B 4.00	715A 2.50	927 1.00	5558/FG32 17.50	5744WA 2.00	5947/TF2 8.00	GL-6166 650.00	
434A 9.00	715B 5.00	930 1.25	5559/FG57 7.50	5749/6BA6W .85	5957/E37 22.00	6177 20.00	
437A 5.00	715C 15.00	931-A 4.50	5560/FG95 25.00	5750/6BE6W 1.75	5959/E41 13.00	GL-6183 400.00	

TERMS: Same as for Arcturus Receiving Tubes.
Many other types of tubes, cyrstals, etc. are available.
Write for quotation.

Remember — Arcturus offers your money back, if you are dissatisfied with our products for ANY reason—or NO reason!

ARCTURUS PRESENTS...THE INGENIOUS CADDI-TESTER

NEED A TUBE CADDY? — A PORTABLE TUBE TESTER?
AT LAST — BOTH IN ONE DURABLE LIGHTWEIGHT PACKAGE!

DOUBLE YOUR TUBE SALES . . .
TEST CUSTOMERS' TUBES ON THE SPOT.
YOU GET BONUS OFFER ON TUBES.

MODEL CT101

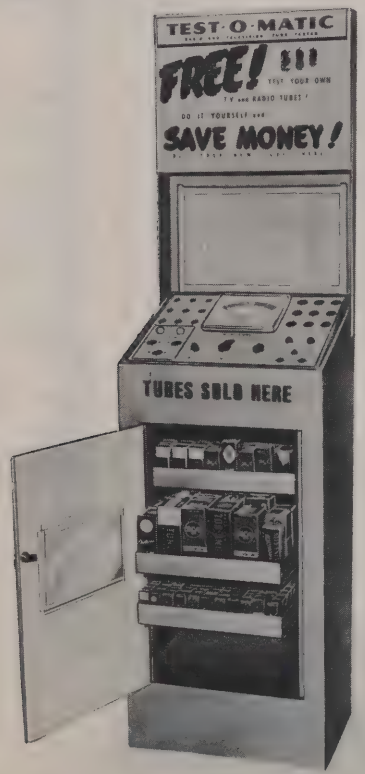
SPECIFICATIONS

- Designed for simple operation, the Caddi-Tester checks Radio and TV tubes, Vibrators, Fuses and OZ4 dynamically.
- Simple, accurate, two control operation, Push button short check.
- Attractive heavy duty caddy, reinforced for years of use, Weight 25 lbs., Size — 14½" x 8" x 21".
- Can hold more than 250 tubes — Lists over 500 on Chart.
- New charts available periodically, as new tube types appear.
- Large 4½" easy to read, good-bad meter.
- 23 long life berrylium sockets, 3 vibrator sockets, 7 and 9 pin tube straighteners, chrome plated steel fuse test.
- Heavy duty power transformer.
- Hermetically sealed neon bulb assembly.
- 100% safety factor ratings on all components.
- Grid clips made of heavy duty steel, with strain relieved cables.
- Standard RETMA guarantee.
- All instructions printed on panel.
- Plug in AC line.
- No vacuum tubes in circuit.

•YOUR CHOICE OF TUBES,

VALUE	$100.00
CADDI-TESTER	69.95
	$169.95
SPECIAL OFFER DISCOUNT	20.00
Both For Only . . .	**$149.95**
CADDI-TESTER ALONE	$69.95

- **FREE BONUS — $8.00 worth of "ARCTURUS" Tubes with order**



- **TIRED OF TESTING MANY TUBES TO SELL ONE?**
- **TIRED OF LOSING TUBE SALES TO DRUG STORES, ETC?**

Arcturus offers you an easy way into the self-service Tube Tester Field!

- **Your choice of Tubes,**

Value —	$200.00
Our Tube Tester	129.95
Total	$329.95
Special Offer Discount	30.00

You Pay only $299.95

You can't lick them — Why not join them?

You get Bonus Offer, Discount & Free Freight on Tubes. Tester shipped Freight Collect, FOB, Union City, N. J.

FAMOUS BRAND SELF-SERVICE TUBE TESTER

Features:

1. MEMORY BANK guarantees non-obsolescence.
2. UNLIMITED CAPACITY to test present and future tube types.
3. SIMPLE & EASY to operate.
4. AWARD WINNING DESIGN — Durable baked-on two-tone wrinkle finish. Triple chrome plated panel.
5. LARGE easy to read, three color tube chart listing latest tube types.
6. ILLUMINATED four color display.
7. PRECISION BUILT, utilizing superior components, ruggedized throughout.
8. THREE EASY SLIDE DRAWERS complete with separators and inventory control system. Stores up to 600 tubes.
9. UNBREAKABLE Plexiglass window allows a customer to see tube stock.
10. TESTS fuses, vibrators, OZ4 tubes dynamically.

UNBELIEVABLE LOW PRICE
only $129.95 Dealer Net

- **FREE BONUS — $16.00 worth of "Arcturus" Tubes with order**
- **You may purchase these testers with R.C.A., Sylvania etc. tubes, if you wish. No free bonus tubes will be given with these brands; 2% discount and free freight on tubes If order is prepaid.**

TERMS

- 2% discount for cash with order
- 25% deposit on all COD'S
- 2%-10 days, net 30 days, if rated in Dun & Bradstreet

Shipment — Freight collect, FOB Union City, N. J.

or — if you wish

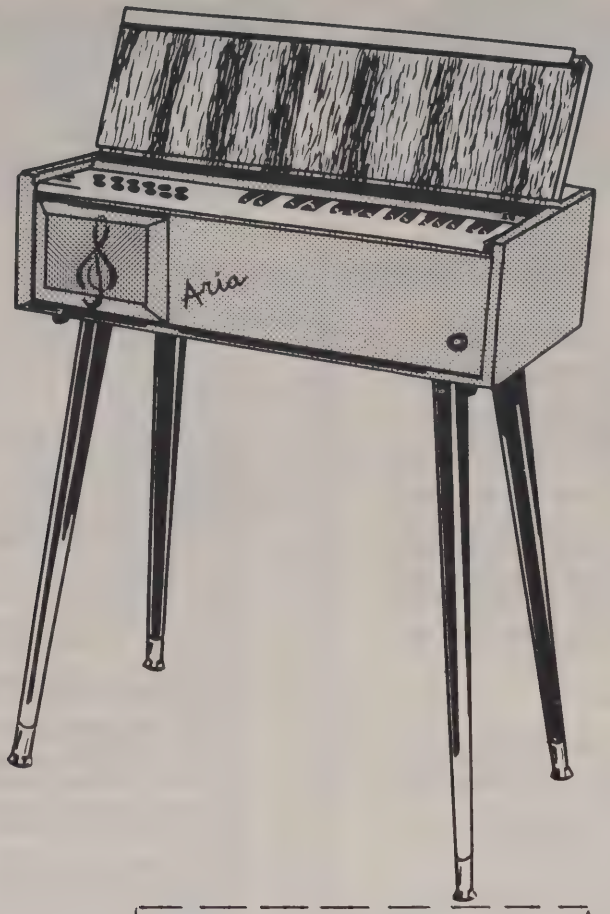
Installment Terms — 20% down payment. Balance in 6 monthly payments.

Use credit form on last page of catalog.

Remember — Arcturus offers your money back, if you are dissatisfied with our products for ANY reason — or NO reason!

AN ADVENTURE IN MUSIC . . .

THE IMPORTED "ARIA"
ELECTRIC CHORD ORGAN



A VERY LOW
$79.95—Mahogany or Walnut finish
$89.95—Blonde finish

Beautiful — Tone, Appearance
Beautiful — Quality Construction
Imagine — 40 Chords — 34 keys — 94 Brass Reeds.
Full tonal range —
Play pops and classics — and at once
Imagine — Big organ sound in a hand-rubbed walnut, mahogany, or blonde finish — fine quality wood cabinet.
Do not imagine that the "Aria" is a toy. It is not. The "Aria" is suitable for professional or private use.
No tuning ever required
Current 110-115 Volt 60 cycle A.C.
FREE — Music bench
FREE — Music Book — Enables you to play immediately Chord guide shows you how

Terms — same as for Arcturus receiving tubes or, if you wish — Installment Terms. 20% with order — balance in 6 monthly payments — shipped freight collect from Union City, N. J.

Weight and dimensions:
Width — 25 inches;
Depth — 11.6 inches;
Height — 32.2 inches;
Weight — 24.2 lbs.
Guarantee:
Parts warranty — 1 year replacement — backed by Arcturus' **money-back guarantee.**

ACTUAL SIZE ! ! !
WE ARE PLEASED TO PRESENT

OUR IMPORTED MIDGET MIRACLE 6-TRANSISTOR, 1 CRYSTAL RADIO

- **Range — Up to 500 Miles**
- **Sensitivity — Extraordinary**
- **Beauty — Unexcelled**

SPECIFICATIONS

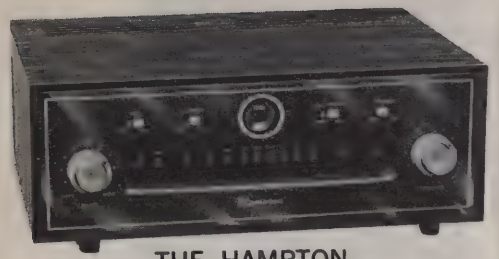
- **Uses 6 Transistors, 1 Germanium Diode, in Super Heterodyne Circuit.**
- **Frequency Range — 535 — 1605 K/C**
- **Intermediate Frequency — 455 K/C**
- **Sensitivity — 60 DB/M — 10 MW**
- **Output — 70 MW, Max.**
- **Battery — Eveready #216 — Equivalent, 9 Volt**
- **Speaker — 2" Dynamic**
- **Size — 4" x 2-3/8" x 1-3/16" ! ! !**
- **Weight — 8 oz. with Battery**

AND

You get a leather carrying case, earphone, earphone case, all in gift box — and all for only $17.95 $17.95

A PAGEFUL OF GOOD AMPLIFIERS

PRODUCTS OF SHELL ELECTRONICS



THE HAMPTON
MODEL 800 FM TUNER

SPECIFICATIONS

Sensitivity: 1.5 Microvolts for 20db quieting; 2.5 Microvolts for 30db quieting
Tuning Range: 88 to 108 Megacycles
Frequency Response: 20 to 20,000 cycles ±1db
Distortion: Less than 1%
IF Bandwidth: 270kc at 6db down
Detector: Balanced Ratio Detector; Peak Separation of 600kc; Linearity of 400kc
Hum Level: 70db below 1 volt output
Antenna Input: 300 ohms balanced
Outputs (3): Dual (2) cathode followers; (1) FM Multiplex
De-emphasis: Standard 75 Microseconds
Oscillator Radiation: Conforms with F.C.C. Standards
AFC Pull In: 200kc ±15kc, 1 volt at detector
Drift: Zero with AFC on
Controls (2): Tuning, Level (Volume)
Switches (4): 1: AFC Off-On; 2: Output Off-On; 3: Multiplex Off-On; 4: Power Off-On
Power Consumption: 45 Watts @ 117 Vac.
Tube Complement (8): 1-6AQ8/ECC85, 3-6AU6, 1-6AL5, 1-6X4, 1-6C4, 1-1629
Dimensions: 12½" W x 4" H x 8" D
Net Weight: 9¾ lbs.

LIST $79.95

YOUR COST **$59.00**

THE MANHASSET
DUAL 20 WATT STEREO AMPLIFIER

SPECIFICATIONS

Power Output: 40 watts (20 watts each channel)
Peak Power: 80 watts
Binaural: 2 volts rms, 4 volts combined
Tape (Recorder Outputs): 2 volts each
IM Distortion: 60 cps—6kc (4 to 1) less than 2%. At rated output
Harmonic Distortion: 30 cps to 10 kc less than 1%
Frequency Response: ± 1db 30 to 20,000 cps @ rated output; ± 1db 30 to 50 kc @ 2 watts
Transient Response: Good square wave reproduction; 3.5 microseconds rise negligible; ringing-fast recovery at 10 kc square wave
Transient Distortion: 60 cps tone burst (less than 1%)
Feedback: 18db
Stability Margin: 15db
Damping Factor: 8
Input Sensitivity @ 1 kc: Tape Head: 3 mv for full output; Mag. Phono: 4 mv for full output; Ceramic Phono: .3 volts for full output; Tuner: .3 volts for full output.
Auxiliary: .3 volts for full output
Tone Balance Signal: .3V rms internal
Low Filter: —12db below 50 cps
Loudness Compensation: +15db at low listening
Equalization: NARTB tape, RIAA phono
Channel Separation: 45 db
Hum-Noise: —80db tuner, aux.; —65db tape; —70db mag.
Tone Controls: Bass (50 cps): +15db to —18db; Treble (15 kc): +16db to —18db
Outputs: Speakers 1 & 2: 4, 8, 16, 32 ohms; Binaural: 600 ohms
Tube Complement: 4-7189, 2-7199, 2-ECC82/12AU7, 1-ECC83/12AX7, 1-GZ-34/5AR4, 1-1629
Power Consumption: 180 watts @ 117 AC
Net Weight: 22 pounds
Size: 15" wide, 10½" deep, 4⅜" high

LIST $129.95

YOUR COST **$86.00**

THE HUNTINGTON
AM-FM STEREO TUNER

SPECIFICATIONS

Sensitivity: FM: 1.2 Microvolts for 20db quieting; 2.1 Microvolts for 30db quieting. **AM:** 3 Microvolts for 20db S/N Ratio
Tuning Range: FM: 88 to 108 mc. **AM:** 540 to 1640 kc.
Frequency Response: FM: 20 to 20,000 cycles ±1db. **AM:** 20 to 5 kc ±1db
Distortion: FM-AM: Less than 1%
IF Bandwidth: FM: 270 kc @ 6db down. **AM:** 10 kc @ 3db down
Detector: FM: Balanced Ratio Detector; Peak Separation of 600 kc, 400 kc linearity. **AM:** Standard Vacuum tube diode
Hum Level: FM-AM: —70db below 1 volt output
Antenna Input: FM: 300 ohms balanced. **AM:** Any—may be coupled to FM
Outputs (7): FM: (2) Dual Cathode followers (1) Multiplex. **AM:** (2) Dual Cathode followers; **AM-FM:** (2) Monaural
De-emphasis: FM: 75 microseconds standards
Oscillator Radiation: FM-AM: Conforms with FCC Standards
Automatic Freq. Control: FM: AFC pull in—200 kc ±15 kc, 1 volt detector
Drift: FM: Zero with AFC on. **AM:** Negligible
Controls (4): AM tuning, FM tuning; AM level, FM level
Switches (4): Power: off-on; AFC: off-on; Multiplex: off-on, AM, FM-AM, FM. Doubles in Monaural as FM-off-AM
Power Consumption: 65 watts @ 117 VAC
Tube Complement (13): 1-6AQ8, 3-6AU6, 2-6AL5, 1-6X4, 1-12AU7, 2-6BA6, 1-6BE6, 2-EM84
Dimensions: 16⅜ W x 5⅜ H x 10⅜ D
Net Weight: 12 lbs.

LIST $159.95

YOUR COST **$105.00**

THE MEADOWBROOK
DUAL 30 WATT STEREO AMPLIFIER

SPECIFICATIONS

Power Output: 60 Watts (30 watts each channel)
Peak Power: 120 Watts
Binaural: 2 Volts rms, 4 volts combined
Tape (Recorder Outputs): 2 volts each
IM Distortion: 60 cps——6 kc. (4 to 1) less than 2% at rated output
Harmonic Distortion: 30 cps to 10 kc less than 1%
Frequency Response: ± 1db 30 to 20,000 cps @ rated output; ± 1 db 30 to 50 kc @ 12 watts
Transient Response: Good square wave reproduction; 3.5 microseconds rise negligible; ringing-fast recovery at 10 kc; square wave
Transient Distortion: 60 cps tone burst (less than 1%)
Feedback: 20db
Stability Margin: 18db
Damping Factor: 10
Input Sensitivity: @ 1 kc. Tape Head: 3 mv for full output; Mag. Phono: 4 mv for full output; Ceramic Phono: .3 volts for full output; Tuner: .3 volts for full output; Auxiliary: .3 volts for full output
Tone Balance Signal: .3V rms. internal
Low Filter: —12db below 50 cps
Loudness Compensation: + 16db at low listening
Equalization: NARTB tape, RIAA phono
Channel Separation: 50db
Hum-Noise: —80db tuner, aux.; —65db tape; —70db mag.
Tone Controls: Base (50 cps): +15db to —18db; Treble (15 kc): +16db to —18db
Outputs: Speakers 1 & 2: 4, 8, 16, 32 ohms; Binaural: 600 ohms
Tube Complement: 4-7591, 2-7199, 2-ECC82/12AU7, 1-ECC83/12AX7, 1-GZ-34-5AR4, 1-1629
Power Consumption: 250 watts @ 117 AC
Net Weight: 26 pounds
Size: 16⅜" W, 10½" D, 5⅜" H

LIST $159.95

YOUR COST **$105.00**

TERMS—same as for Arcturus Tubes, except these items shipped freight collect.
F.O.B. UNION CITY, NEW JERSEY

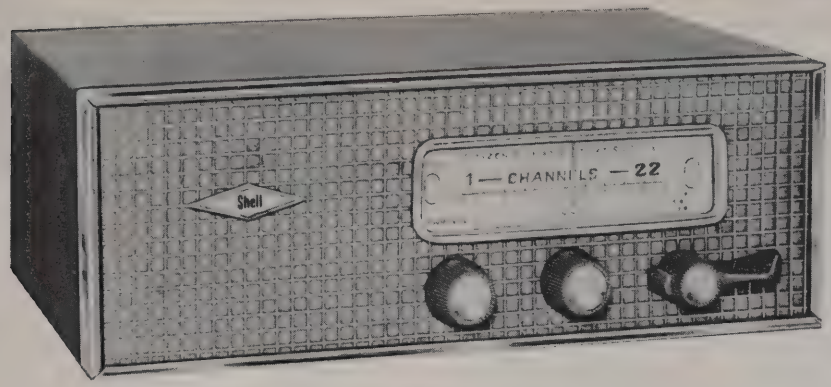
Time Payment Terms—20% Down, 6 Months To Pay Balance. See last page of catalog.

SATIN-FINISHED, HAND RUBBED WALNUT WOOD CABINETS. MAY BE DISASSEMBLED FOR WALL INSTALLATION BY REMOVAL FROM CABINET. FRONT AND BOTTOM PANELS ARE DEMOUNTABLE AS HOUSINGS FOR UNIT WHEN INSTALLED IN WALL OR OTHER AREA OR PIECE OF FURNITURE.

OTHER GOOD AND NOVEL SHELL PRODUCTS.

MODEL CB-12 Citizens Band Receiver-Transmitter

★ **NEW SUPERHETERODYNE MODEL**



Net Price **$95.00**
Far, far less than any comparable instrument.

FEATURES:

- **Push-to-talk microphone—for your driving safety and convenience**
- **Super-Heterodyne circuit — found only in much Higher-Priced tranceivers.**
- **Built-in Power Supply unit is ready for use when unpacked nothing more to buy.**
- 4 Channel crystal-controlled.
- 22 Channel continuous tuning, Slide-Rule type tuner.
- Built-in Noise Limiter: on-off switch.
- 5 watt input R.F. Amplifier.
- 3RD Overtone Crystal oscillator.
- 110 Volt or 12 Volt operation. Use in auto or home.
- Mobile or Desk Mounting swivel bracket included.
- On-Off power indicator.
- R.F. output and modulation indicator.
- Styling — Lovely.

The NEW CB-12 has a 4 channel crystal selector, built-in noise limiter, sensitivity of 1 microvolt usable signal and a **push-to-talk ceramic microphone.**

Terms: Same as for Arcturus tubes or installment payments see last page.

Model C-2
MULTI-PURPOSE CHECKER

List Price $11.50
Dealer
Cost
$6.95
MODEST —
CONSIDERING
USES & EXTRAS

Checks —
Fuses, Pilot Lights, High Voltage Tube Continuity, Circuit Continuity
Contains these different extras:
Two Tube pin straighteners •
Built-in flashlight •
Uses — 2 — 1½ volt Penlite batteries — Needs no outside power source.

PM-102 JR. JUKE
THE JUNIOR JUKE BOX
A MAJOR DELIGHT FOR CHILDREN

JR. JUKE . . . the outstanding phonograph buy of the year. High impact styrene construction. Exceptionally fine tonal quality . . . JR. JUKE contains a 6" speaker and operates on AC current. Interior lighting affords colorful realistic appearance. Easily cleaned with a damp cloth.

4 speed phonograph plays all size records (78, 45, 33⅓, 16 r.p.m.), powerful amplifier with separate tone and volume controls, permanent type needle, interior jukebox lighting for exciting eye appeal, packed fully assembled, ready to play, 36" high, 22" wide, 14½" deep, **also available with Automatic Changer PA-102**

Dealer Cost **$32.00**

List Price $49.95

WELL BUILT, PROPERLY DESIGNED, HIGHLY EFFICIENT — TEST INSTRUMENTS PRODUCTS OF A GOOD MAKER.

GUARANTEED AS GOOD AS DESCRIBED — BACKED BY ARCTURUS' MONEY-BACK POLICY.

VACUUM TUBE VOLTMETER —

MODEL 77 **6" METER!**

Completely wired. Compare it to any peak-to-peak V.T.V.M.! **FEATURES:** Printed circuit. Tubes(1) 12au7 D.C. amplifier, (2) 9006 rectifiers, plus selenium rectifier. Meter-6", 400 micro-ampere burn-out proofed by means of balanced push pull amplifier isolation from measuring circuit. Accuracy — 1% resistors used as multipliers. Accuracy assured in all ranges.

SPECIFICATIONS: As per attached

USES: 1 — As a D.C. voltmeter — any voltage up to 1500, low load. Special feature built-in for zero-center measurements necessary for proper alignment of F.M. detectors, ratio and gated beam detectors.

2 — As an A.C. voltmeter — quickly and simply measures sine wave R.M.S. value, complex wave peak to peak value, pedestal and saw tooth voltages, and sync pulses.

3 — As an ohmmeter — measures resistances (accurately) from .2 ohms to 1000 megohms. Leaky capacitors, intermittents show up at once because of its sensitivity and low loading.

Accessories — carrying case, probe, test leads, complete instruction book. Operates on 110-120 volts, 60 cycle — a really low price, complete at..... **$42.50 NET**

- **DC VOLTS** — 0 to 3/15/75/150/300/750/1500 volts at 11 megohms input resistance.
- **AC VOLTS (RMS)** — 0 to 3/15/75/150/300/750/1500 volts.
- **AC VOLTS (Peak to Peak)** — 0 to 8/40/200/400/800/2000 volts.
- **ELECTRONIC OHMMETER** — 0 to 1000 ohms/10,000 ohms/100,000 ohms/1 megohm/10 megohms/100 megohms/1,000 megohms.
- **DECIBELS** — -10 db to +18 db, +10 db to +38 db, +30 db to +58 db. All based on 0 db .006 watts (6 mw) into a 500 ohm line (1.73v).
- **ZERO CENTER METER** — For discriminator alignment with full scale range of 0 to 1.5/7.5/37.5/75/150/375/750 volts at 11 megohms input resistance.

VOLT-OHM MILLIAMETER —

MODEL 770A

POCKET SIZED FIRST

Full-view D'ARSONVAL meter- 71% more scale area. At last — large type permits accurate measurements, not approximations, with a low-priced small V.O.M. **FEATURES** — small size: 3⅛" x 5⅞" x 2¼" — pocket size . Meter 850 microampere "full view" 2% plus or minus. Case—plastic, round-cornered, etched lettering filled with permanent white, readable for life. Shipped with batteries, test leads, instruc tion book only $15.85.

A very modest, ... **$15.85 NET**

SPECIFICATIONS:

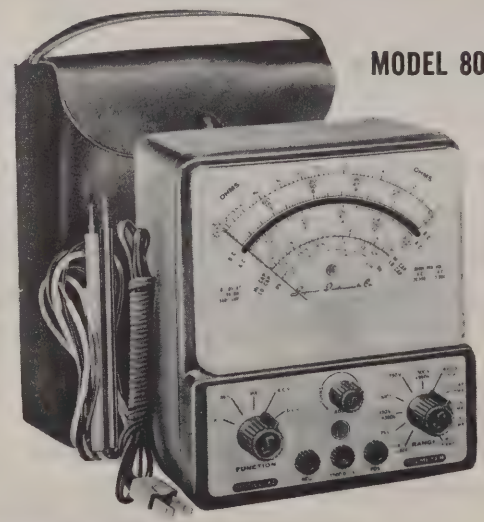
6 A.C. VOLTAGE RANGES: 0-15/30/150/300/1500/3000 Volts.

6 D.C. VOLTAGE RANGES: 0-7.5/15/75/150/750/1500 Volts.

2 RESISTANCE RANGES: 0-10,000 Ohms, 0-1 Megohm.

3 D.C. CURRENT RANGES: 0-15/150 Ma., 0-1.5 Amps.

3 DECIBEL RANGES: —6db to +18 db, +14 db to +38 db, +34 db to + 58 db.



MODEL 80

20,000 OHMS PER VOLT

ALLMETER (V.O.M.)

Under $50.00 — best in its price quality class.

FEATURES — meter-6" wide-view, mirrored scale for accurate measurement of fractional readings. Capacity ranges — all condensers from .00025 to 30 M.F.D. Reads all standard voltage, current, resistance and decibel ranges. Line cord used only for capacity measurement. Resistance ranges operate on self-contained batteries. 1% resistors to assure unfailing reading accuracy. Built-in isolation transformer — isolates instrument from power line when using capacity section.

SPECIFICATIONS: As per attached

ACCESSORIES: test leads, carrying case, instruction book. Net price **$42.50**

SPECIFICATIONS:

7 D.C. VOLTAGE RANGES: (At a sensitivity of 20,000 Ohms per Volt) 0 to 15/75/150/300/750/1500/7500 Volts.

6 A.C. VOLTAGE RANGES: (At a sensitivity of 5,000 Ohms per Volt) 0 to 15/75/150/300/750/1500 Volts.

3 RESISTANCE RANGES: 0 to 2000/200,000 Ohms. 0-20 Megohms.

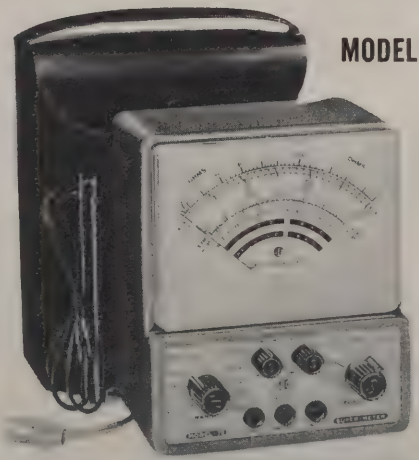
2 CAPACITY RANGES: .00025 Mfd. to .3 Mfd., .05 Mfd. to 30 Mfd.

5 D.C. CURRENT RANGES: 0-75 Microamperes, 0 to 7.5/75/750 Milliamperes, 0 to 15 Amperes.

3 DECIBEL RANGES: —6 db to +18 db. +14 db. to +38 db +34 db to +58 db.

SUPER-METER

MODEL 79



It's a: volt — ohm — milliammeter. Capacitance — reactance — inductance — decibel measurer. Selenium and silicon rectifier, silicon and germanium diode tester.

And all readings shown on a 6" full-view meter!

SPECIFICATIONS — As per attached

ACCESSORIES — carrying case, test leads and instruction book. All this at just ..... **$38.50 NET**

SPECIFICATIONS

D.C. VOLTS: 0 to 7.5/15/75/150/750/1,500.

A.C. VOLTS: 0 to 15/30/150/300/1,500/3,000.

D.C. CURRENT: 0 to 1.5/15/150 MA 0 to 1.5/15 AMPERES.

RESISTANCE: 0 to 1,000/100,000 OHMS 0 to 10 MEGOHMS.

CAPACITY: .001 to MFD. 1 to 50 MFD.

REACTANCE: 50 to 2,500 OHMS, 2,500 OHMS to 2.5 MEGOHMS.

INDUCTANCE: .15 to 7 HENRIES, 7 to 7,000 HENRIES.

DECIBELS: 6 to +18, +14 to +38, +34 to +58.

The following components are all tested for QUALITY at appropriate test potentials. Two Separate BAD-GOOD scales on the meter are used for direct readings.

ALL ELECTROLYTIC CONDENSERS from 1 MFD to 1000 MFD • ALL SELENIUM RECTIFIERS ALL SILICON RECTIFIERS • ALL GERMANIUM DIODES • ALL SILICON DIODES

MORE — AND JUST AS GOOD — TEST INSTRUMENTS

C.R.T.-REJUVENATOR-TESTER FOR:

MODEL 83

• ALL C.R.T.'S — 50° to 110° — Color or black and white. • Anywhere — in carton, set, or on bench. • **SPECIFICATIONS** — radically different up-to-the-minute circuit. • Filament voltages—6.3 to 8.4 volts. • Meter — 4" air-damped, with good-bad, and numbered scales. • Color tube test — red, green, blue, sections tested individually — as it should be done. • Test — Rejuvenator section — special reject switch detects whether tube needs repair. Meter will show apparently good as really bad, when defects are hidden. • Rejuvenator section applies selective low voltage uniformly to elements — no cathode-stripping danger, can be applied again and again to same tube without damage. **ACCESSORIES** — carrying case — all sockets for color and black and white tubes. Repays its cost almost at once. A good investment .....

$38.50 NET

MODEL TW-11

TUBE TESTER —

STANDARD PROFESSIONAL TYPE

FEATURES — tests — 4, 5, 6, 7, 8, pin tubes, loctals, hearing aid, thyratron, miniature, sub-miniatures, novals, sub-minars, proximity fuse types, etc.

SWITCHES — self-cleaning lever action, for individual element testing. Lever numbers in use identify elements under test. Neutral position for tapped and multi-heater filament tubes prevents burn-out and assures proper test.

SOCKETS — individual sockets for each type of pin-based tube. You can't put a tube in wrong socket.

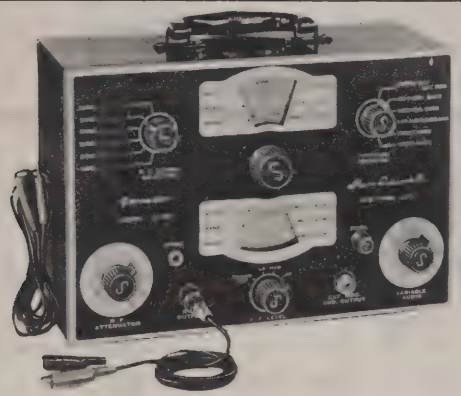
TUBE CHART — built-in, free-rolling-lists hundreds of types.

NOISE TEST — phono-jack on front panel for phones or external amplifier to detect microphonic or loose elemented tubes.

SEPARATE scale for wide scale reading of diodes and similar low reading tubes.

Housed in saddle-stitched texon case at only .....

$47.50 NET



MODEL TV-50A
$47.50 NET

GENOMETER —

7 IN 1 SIGNAL GENERATOR

R.F. for A.M. — Bar Generator, Marker Generator — R.F. for F.M. — Cross Hatch Generator — Audio frequency — color dot pattern generator.

• Provides all outputs for servicing A.M. and F.M. radio, amplifiers, black and white and color T.V.

SPECIFICATIONS —

1 — R.F. signal generator — generates R.F. from 100 K.C. to 60 M.C. on fundamentals, 60 M.C. to 180 M.C. on harmonics. Complete coverage on A.M. and F.M. alignment.

2 — Cross hatch generator — projects cross-hatch pattern on any picture tube — shows stable horizontal and vertical lines interlaced to make cross-hatch pattern.

3 — Variable audio frequency generator — fixed 400 cycle sine wave audio, plus variable 300 to 20,000 cycle peaked wave audio signal.

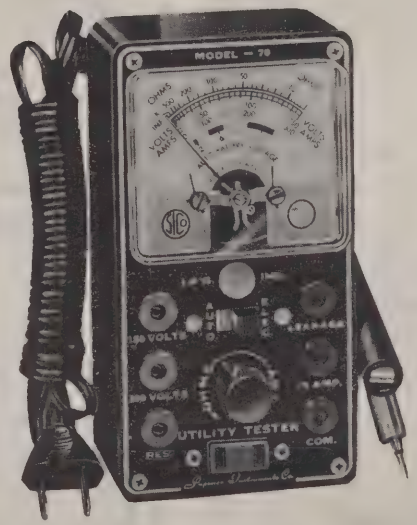
4 — Dot pattern generator — color T.V. use — a must in color servicing. Dot pattern projected on color tube enables you to adust for proper color convergence.

5 — Bar generator — projects bar pattern on any T.V. picture tube screen. Pattern consists of 4 to 16 horizontal bars, 7 to 20 vertical bars.

6 — Marker generator — provides all most frequently needed marker points, as follows: 189 K.C., 262.5 K.C., 456 K.C., 600 K.C., 1000 K.C., 1400 K.C., 1600 K.C., 2000 K.C., 2500 K.C., 3579 K.C., 4.5 M.C., 5 M.C., 10-7 M.C. (3579 K.C. is color burst frequency).

Shipped complete with instruction book and shielded leads.

MODEL 70



UTILITY TESTER —

Our versatile electric appliance and automobile circuit tester — tests any and all problem units. Measures — voltages, resistance, current leakage.

USES — tests toasters, irons, broilers, heating pads, clocks, fans, vacuum cleaners, lamps, refrigerators, fuses, switches, thermostats, etc.

MEASURES — Current-Consumption — of A.C. or D.C. appliances — while they operate — directly in amperes — by plugging appliances directly into front panel receptacle. Resistance Checks — checks all resistances usually used in motors, appliances etc. on accurate, direct-reading scale. Also checks continuity, shorts and open filaments. Range of resistances read — 0 to 5 megohms.

VOLTAGE TESTING — shows whether A.C. & D.C. and give actual voltage reading.

MOTOR TESTING — all motors from factional H.P. to 2 H.P., single or multi-phase, universal, squirrel cage, induction, etc.

SHORTS — instantly locates opens, shorts and grounds

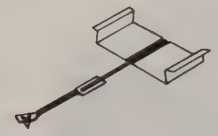
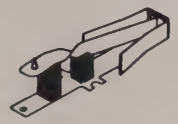
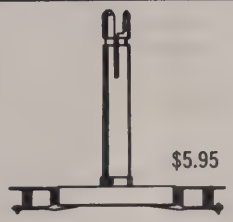
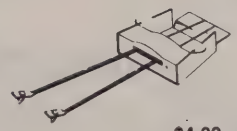
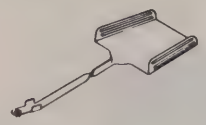
ACCESSORIES — all test leads, instruction book.

HOUSED in round-cornered bakelite case. Just .....

$15.85 NET

PHONO NEEDLES "ARCTURUS" GEMS

These products of the combined arts of the lapidary and the precision machinist are offered to you after microscopic examination and **EXTREME** care in manufacture. **Types** shown are those most frequently used — list prices appear with (picture of needle). Your costs are shown below.

$2.50	$2.50	$2.50	$2.50	$2.50	$3.00	 $3.00	$3.50
18 ASTATIC A	**21** ASTATIC G	**22** ASTATIC K	**23** ASTATIC Q	**32** BSR (Monarch TC8)	**36** CBS HYTRON	**57** EV STEREO	**71** GE CLIP
 $3.50	 $5.95	$4.00	$3.75	$3.75	$3.75	$2.50	$2.50
72 GE VRII	**73** GEN. ELEC.	**82** MAGNAVOX	**85** PE 8/10	**86** PE 12	**91** PHILCO	**100** RCA	**102** RCA LONG
$2.50	 $4.00	 $2.50	$2.50	$4.00	$4.00	$4.00	$2.50
103 RCA STEREO	**104** RCA STEREO	**111** RONETTE SA	**130** SHURE	**134** SHURE	**143** SONOTONE 3T	**148** SONOTONE 8T	**158** VACO

(Price shown in each box is sapphire list price)

L-P Replacements for Ronette-Astatic Type

Sapphire List Price **$2.50**
order #110-LP-S—**65¢** boxed, each

Diamond
order #110-LP-D—**$2.55** boxed, each

Sonotone 2-T Replacement
Dual-Sapphire List Price **$3.50**
order #142ss—**$1.05** boxed, each

Diamond Sapphire
order #142ds—**$2.75** boxed, each

Your cost prices shown at right are for packaged needles. Order by Needle No., and in the case of single-tip needle types, specify tip size desired: i.e. LP, AG (all-groove), 78 or X (stereo). Indicate Sapphire or Diamond by "S" or "D"—for tandemtip types "SS" or "DS". Examples: 18-LP-S, 21-AG-S, 130-LP-D, 85-SS, 134-DS.

List Price	Needle No.'s	Your Costs Sapphire	Your Costs Diamond
$2.50	18, 21, 22, 23, 32, 100 102, 103, 111, 130, 158	75¢	$2.59
$3.00	36, 57	90¢	
$3.50	71, 72	$1.05	
$3.75	85, 86, 91	$1.13	$2.79
$4.00	82, 104, 134, 143, 148	$1.20	
$5.95	73	$1.75	$2.99

Bulk needle buyers-ATTENTION: We offer a 10% discount for orders of $100-or more, assorted, unboxed—5% discount if boxed.

TERMS—Same As For Arcturus Tubes

USE THIS RETURN AIR MAIL BLANK
FOLD IN THIRDS AND MAIL — "POSTAGE PAID BY US"

FIRST CLASS
PERMIT NO. 959
UNION CITY, N. J.

BUSINESS REPLY MAIL
NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

VIA AIR MAIL

9¢ - POSTAGE WILL BE PAID BY -

ARCTURUS ELECTRONICS CORP.
502—22nd STREET
UNION CITY, N. J.

NOTICE TO THE BUYER—RETAIL INSTALLMENT CONTRACT

Do not sign this contract before you read it. Under the law you have the following rights among others: a) To pay off in advance the full amount due and obtain a partial refund of the finance charge; b) Under certain conditions to redeem the property, if repossessed for a default.

FILL IN THIS FORM WHEN ORDERING ON EASY PAYMENT

Please answer all questions fully to help establish your credit promptly. Write your order on the reverse side.

NOTE: Easy payment contracts cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

ARCTURUS ELECTRONICS CORP., UNION CITY, N. J. **RETAIL INSTALLMENT CONTRACT**

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment listed on the reverse side. I will pay $_____ each month at your office, starting thirty days after shipment, as required by the terms stated in your current catalog, until the total time payment price is paid. The title to, and right of possession of the equipment shall remain with you until fully paid. It is agreed that I will protect the equipment, and will not sell, mortgage, remove, or otherwise deprive you of possession of it without your consent in writing. Upon default of any payment or payments, you may declare the entire unpaid balance due at once, and hold me liable for the full unpaid balance, or you may retake the equipment, as you may elect. If this order is not accepted by you on Time Payment, you are to refund the deposit with notice of non-acceptance. Acceptance of this order shall be effected only by your shipment to me of the equipment listed on the reverse side. For the purpose of receiving credit on this basis, I make the following representations:

Your written signature X _____

Home Address _____ (No. and Street or R. F. D. No. and Route) _____ (City and State) How Long at This Address _____ Telephone No. _____

Board ☐ Living With Parents ☐
Rent ☐
Own ☐ Landlord's Name and Address _____

Previous Home Address _____ How Long _____

Age _____ Single ☐ Married ☐ Number of Dependents Including Wife _____ Have You Ever Purchased From Arcturus Electronics ☐ Yes ☐ No If Purchased on Time Payments, Give Account Number _____ Balance Owing $ _____

Draft Classification _____ If on Active Duty, Give Military Address _____ Serial No. _____

Name of Present Employer _____ Your Position _____ How Long _____

Business Address _____ Telephone No. _____ Monthly Income $ _____

Former Employer _____ Employer's Address _____ How Long _____

If in Business for Yourself Give Name and Address _____ What Kind _____ How Long _____

If Spouse Employed, Give Name and Address of Employer _____ Position _____ How Long _____

Bank Account With Name and Address _____ Checking ☐ Saving ☐

Credit Account With _____ (Name) (Address) (City and State) Highest Credit _____ Open ☐ Closed ☐

Credit Account With _____ (Name) (Address) (City and State) Highest Credit _____ Open ☐ Closed ☐

Credit Account With _____ (Name) (Address) (City and State) Highest Credit _____ Open ☐ Closed ☐

IMPORTANT: Please sign this form on line "X" before mailing. Be sure to give age.

AIR MAIL ORDER FORM

tear off on perforated line and mail, postage free

Ordered From: **Arcturus Electronics Corp.**
502 — 22nd Street
Union City, New Jersey

Phones: **UNion 4-** 5568, 5569, 5570

BY:

YOUR NAME _____

ADDRESS _____

CITY _____ STATE _____

DATE _____

INVOICE # _____

CUST. ORDER _____

SHIPPED VIA:

C.O.D. . . . ☐
PARCEL POST . ☐
UNITED PARCEL ☐
OTHER _____

PAYMENT METHOD:

☐ CASH IN ADVANCE _____
☐ 2% 10 DAYS, NET 30 _____
☐ TIME PAYMENT _____
☐ C.O.D. _____

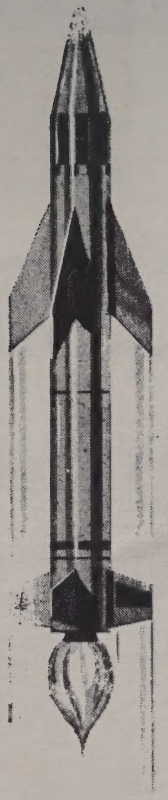
TIME PAYMENT TERMS:

AMOUNT OF PURCHASE $ _____
20% DOWN $ _____
BALANCE $ _____
10% HANDLING CHARGE $ _____
TOTAL DUE SIX EQUAL MONTHLY PAYMENTS $ _____

COL. 1 QTY.	ITEM	UNIT COST	TOTAL	COL. 2 QTY.	ITEM	UNIT COST	TOTAL

FROM:
Arcturus Electronics Corp.
502 — 22 Street
Union City, New Jersey

BULK RATE
U.S. POSTAGE
PAID
Permit No. 1136
Union City, N. J.



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3633 W 32 Ave
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FALL 1960 CATALOG

"Arcturus," SINCE **1925** — A GRAND OLD NAME IN ELECTRONICS PRESENTS
Fine Products . . . at low Prices . . . on a No-Risk Basis . . . Quick Delivery

- Electronic Tubes — (Transmitting, Picture, Receiving, Special Purpose)
- Test Instruments . . . Self-Service Tube Testers . . . Audio Systems . . . Parts.
- Phonograph Needles and Records — Transistor Radios

Headline Items — Our Best Buys — WHILE THEY LAST

- 5" TV Bench Test Picture Tube: New — Not Rebuilt (5FP7)—Electro-Magnetic Focus, (Uses focus coil of set under test)—no ion trap needed—Handles all currently used TV anode voltages—works in any T.V. set except 110° Angle — Complete with socket adapter harness. Ready to use at once. **$4.99**
- 7" TV Bench Test Picture Tube: New — Not Rebuilt (7BP7)—Flat Face—Electro-Magnetic Focus, (Uses focus coil of set under test)—no ion trap needed — Handles all currently used TV anode voltages — works in any T.V. set except 110 Angle — Complete with socket adapter harness. Ready to use at once. **$6.99**
- Guaranteed 1 year against all defects—Except Breakage.
- SPECIAL OFFER — order 12, GET ONE FREE.
- Above tubes shipped post-paid, if order is Pre-paid.

Gentlemen:

We are proud and happy to announce that "Arcturus is Back", thanks to the many thousands who have chosen to do business with us since our fine old brand appeared on the market again in April 1959.

Please note many new items offered today, at extremely low prices. All this is made possible by our no-middleman policy of selling direct-to-you, the serviceman.

We assure you that expanded volume has not caused any slacking of quality control on any product we offer. On the contrary, we are just as careful in trying to assure 100% performance as ever, to keep the patronage of the great number of service companies who order from us regularly and who have helped us to grow so well.

Your patronage has been, and always will be, welcome. Thanks for all your past favors.

Respectfully yours

"Arcturus"

"ARCTURUS", A GREAT NAME IN ELECTRON TUBES SINCE 1925

- **"ARCTURUS"** Tubes are unconditionally guaranteed for one year (EXCEPT BREAKAGE) — Individually boxed in ARCTURUS boxes currently dated.
- **"ARCTURUS"** Receiving tubes are approximately half your usual costs — Reason — No Middleman.
- **"ARCTURUS"** Quality* our customers report lowest reject rate of any major brand.
- **"ARCTURUS"** Service — Use our Air-Mail order form last page of this catalog. We ship from stock on the day of receipt of order by first class mail. Special Handling. And — your **MONEY BACK** if you don't find them as good as the Best Known Brands in tubes. No ifs, ands or buts. Just return for Prompt Refund.

FREE $2.00 WORTH OF TUBES, YOUR CHOICE, WITH EACH $25.00 PURCHASE. Order any quantity, earn your bonus. Offer good until further notice.

0Z4 .60	3BU8 .71	5AT8 .81	6AH6 1.19	6BF6 .45	6CF6 .64	6DT5 .73	6W4 .66	12AF3 .70	12BZ7 .76	12FA6 .50	25CA5 .63
1AF4 1.12	3BY6 .59	5AU4 .85	6AK5 1.17	6BG6 1.63	6CG7 .61	6DT6 .54	6W6 .78	12AF6 .58	12C5/CU5 .59	12FK6 .46	25C5 .54
1AG4 1.70	3BZ6 .59	5AV8 1.01	6AK6 .80	6BH6 .68	6CGB .79	6DT8 .94	6X4 .46	12AG6 .48	12C8 1.42	12FM6 .46	25CD6 1.46
1AK4 1.70	3CB6 .58	5AW4 .73	6AL5 .46	6BH8 .88	6CH8 .90	6EA7 .86	6X5 .53	12AJ6 .44	12CA5 .63	12K5 .68	25CU6 1.15
1AK5 1.70	3CF6 .64	5AX4 .66	6AL7 1.45	6BJ6 .65	6CK4 .70	6EA8 .80	6X8 .79	12AL5 .58	12CN5 .56	12L6 .63	25DN6 1.39
1AX2 .84	3CS6 .61	5BE8 .82	6AM8 .82	6BJ7 .79	6CL6 .94	6EB8 .92	6Y6 .85	12AL8 1.01	12CR6 .60	12SA7 .92	25DQ6 1.05
1B3 .79	3CY5 .71	5BK7 .85	6AN8 .88	6BJ8 .73	6CL8 .79	6EH5 .59	7AU7 .65	12AQ5 .60	12CS6 .55	12SG7 .92	25EC6 1.42
1J3/1K3 .79	3D6 1.45	5BQ7 1.00	6AQ5 .59	6BK5 .92	6CM6 .64	6EH8 .80	8AU8 .89	12AS5 .63	12CT8 1.02	12SK7 .85	25EH5 .58
1L4 .74	3DT6 .55	5BR8 .82	6AQ6 .60	6BK7 .90	6CM7 .69	6EM5 .76	8AW8 .92	12AT6 .47	12CU5 .59	12SL7 .94	25L6 .63
1L6 .84	3Q4 .73	5BT8 .82	6AR5 .67	6BL7 1.08	6CM8 .89	6ER5 .74	8BA8 .92	12AT7 .76	12CU6 1.12	12SN7 .68	25W6 .78
1R5 .67	3S4 .65	5BW8 .85	6AR8 1.09	6BN4 .63	6CN7 .69	6EU8 .79	8BH8 .89	12AU6 .54	12CX6 .56	12SQ7 .82	25Y5 .83
1S4 1.29	3V4 .62	5BZ7 .95	6AS5 .81	6BN6 .76	6CQ8 .83	6EW6 .58	8BN8 .74	12AU7 .61	12D4 .75	12U7 .63	25Z5 .73
1S5 .66	4AU6 .55	5CG8 .82	6AS8 .85	6BN8 .68	6CR6 .60	6F6 .91	8BQ5 .66	12AV5 .96	12DB5 .69	12V6 .54	25Z6 .81
1T4 .62	4BA6 .51	5CL8 .79	6AT6 .48	6BQ5 .65	6CS6 .59	6GH6 .88	8CS7 .74	12AV6 .46	12DE8 .73	12W6 .75	35B5 .73
1U4 .59	4BC5 .60	5CM8 .89	6AT8 .84	6BQ6 1.09	6CS7 .70	6GH8 .92	8CG7 .63	12AV7 .80	12DF7 .76	12X4 .45	35C5 .60
1U5 .55	4BC8 1.01	5CQ8 .85	6AU4 .93	6CU6 1.09	6CU5 .59	6GK6 .85	8CM7 .71	12AW6 .75	12DK7 .74	13DE7 .75	35L6 .66
1V .91	4BE6 .56	5CZ5 .71	6AU6 .60	6BQ7 .99	6CU8 .91	6J6 .70	8CN7 .65	12AX4 .75	12DL8 .99	13DR7 .75	35W4 .50
1V2 .52	4BN6 .76	5DH8 1.01	6AU7 .74	6BR8 .98	6CX8 .91	6K6 .66	8CX8 .93	12AX7 .64	12DQ6 1.05	17AV5 .96	35Z5 .63
1X2 .84	4BQ7 1.00	5EA8 .79	6AU8 .88	6BS8 .98	6CY5 .70	6K7 .95	8EB8 .95	12AZ7 .69	12DQ7 .83	17BQ6 1.15	45Z3 .59
2AF4 1.01	4BS8 .96	5EU8 .80	6AV5 1.00	6BU5 1.40	6CY7 .74	6L6 1.05	8EM5 .78	12B4 .68	12DS7 .88	17C5 .59	45Z5 .45
2EN5 .53	4BU8 .71	5J6 .71	6AV6 .46	6BU8 .70	6CZ5 .71	6L7 1.25	8SN7 .66	12BA6 .50	12DT5 .74	17D4 .76	50B5 .79
2BN4 .64	4BX8 .87	5T8 .85	6AW8 .89	6BV8 .80	6D6 1.09	6Q7GT .85	9AU7 .65	12BA7 .99	12DT7 .76	17DQ6 1.06	50C5 .75
2CY5 .71	4BZ6 .56	5U4 .69	6AX4 .72	6BW8 .83	6DA4 .67	6S4 .58	9BR7 .67	12BD6 .61	12DT8 .94	17H3 .54	50CD6 1.84
2X2 1.00	4BZ7 1.01	5U8 .82	6AX5 1.05	6BY6 .62	6DB5 .67	6SA7 .84	9CL8 .79	12BE6 .54	12DV8 .85	17R5 .65	50EH5 .58
3A2 .92	4CB6 .58	5V3 .96	6AX8 .92	6BY8 .66	6DB6 .51	6SH7 .88	9EF6 .89	12BF6 .45	12DW8 .78	18A5 1.04	50L6 .66
3A3 .85	4CE5 .59	5V4 .88	6AZ8 1.05	6BZ6 .62	6DC6 .70	6SJ7 .94	9U8 .83	12BH6 .50	12DZ6 .58	19AU4 .88	117Z3 .62
3AL5 .47	4CS6 .59	5V6 .55	6BA6 .58	6BZ7 1.00	6DE6 .67	6SK7 .78	10C8 1.06	12BH7 .76	12EA6 .56	19BG6 1.63	
3AU6 .54	4CY5 .71	5X8 .82	6BA7 .93	6BZ8 1.06	6DE7 .74	6SL7 .82	10DE7 .74	12BK5 1.00	12ED5 .63	19C8 1.12	
3AV6 .46	4DE6 .63	5Y3 .49	6BA8 .93	6C4 .46	6DK6 .65	6SN7 .72	10Y 1.09	12BL6 .54	12EG6 .55	19J6 .79	
3B2 1.56	4DT6 .56	6A8 1.20	6BC5 .61	6C6 1.09	6DN6 1.65	6SQ7 .78	11CY7 .75	12BN6 .76	12EH5 .59	19T8 .94	
3B7 1.80	5AM8 .82	6AB4 .54	6BC8 1.00	6CA5 .63	6DN7 .88	6T4 1.14	12AB5 .61	12BQ6 1.12	12EK6 .58	19V8 .98	
3BA6 .54	5AN8 .89	6AC7 1.21	6BD5 1.21	6CB5 1.90	6DQ5 1.93	6T8 .93	12AC6 .55	12BR7 .74	12EL6 .44	19X8 .95	
3BC5 .59	5AQ5 .55	6AF4 1.00	6BD6 .61	6CB6 .62	6DQ6 1.04	6U8 .82	12AD6 .58	12BV7 .76	12EM6 .73	21EX6 1.43	
3BE6 .56	5AS4 .65	6AG5 .79	6BE6 .55	6CD6 1.45	6DR7 .74	6V3 1.20	12AE6 .47	12BW4 .44	12EN6 .71	25A6 .76	
3BN6 .76	5AS8 .87	6AG7 1.48	6BF5 .89	6CE5 .59	6DS5 .66	6V6 .61	12AE7 .84	12BY7 .76	12EZ6 .55	25BQ6 1.15	

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